

RADIO

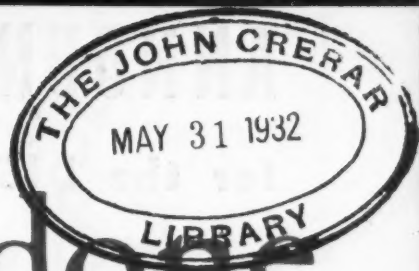
REG.
U.S. PAT.
OFF.

MAY, 1932 - Annual Trade Show Issue



Everybody told us

It can't be done
but here it is!



- Ten - tubes — new type, of course.
- Twin Speakers.
- Automatic volume control.
- Beautiful 6-legged cabinet.

\$49⁹⁵
Complete

Clarion

With 98% pure tone

Other sensational values from 6-tube midget to a 12-tube console, incorporating every new radio feature.

EXHIBITION BOOTHS 69, 70, 71
DEMONSTRATION ROOMS 556A and 557A

Prices slightly higher west of the Rockies, and do not include proposed sales tax.

TRANSFORMER CORPORATION OF AMERICA, Ogden and Maple Avenues, Chicago, Illinois



TUNG-SOL

ANNOUNCES A CONSIGNMENT PLAN

for the DISTRIBUTION and SALE of RADIO TUBES

Effective **MAY 1, 1932** Tung-Sol Radio Tubes will be distributed on a consignment basis, through carefully selected wholesale and retail agents. This is the first time any manufacturer in the tube industry has attempted such a plan of distribution on a nation-wide scale. Only a few leaders in the industry could operate such a plan successfully because of the large capital reserve which it obviously necessitates. The advantages to the entire trade are expected to be numerous. ¶ Broadly speaking, this plan will undoubtedly exert seven immediate stabilizing influences, which the entire industry sorely needs:

1. By the selection of only high grade outlets, it will prevent unfair and ruinous competition.
2. It will assure both wholesaler and retailer of a fair margin of profit on all tube sales.
3. It will tend to create a retail price structure which the consumer can learn to depend upon as a standard of tube values.
4. It will fully protect both wholesaler and retailer against losses resulting from price reductions and obsolescence.
5. It will give the wholesaler an additional protection against credit losses which is not existent under present selling methods. This is very desirable in these especially trying times, particularly in the radio industry.
6. It will enable both wholesaler and retailer to carry sufficient stocks of all types of tubes to meet their requirements without any financial investment whatsoever on either merchant's part.
7. It will eliminate the wholesaler's usual investment in current accounts receivable.

When viewed from all angles and carefully studied, this plan of distribution offers advantages to the individual dealer and wholesaler, which are almost illimitable. It is a revolutionary plan, but one which is soundly conceived. It will have a far reaching effect on the tube business of every section of the trade, and for that reason is of universal interest to all wholesalers and retailers of radio tubes. Wholesale and retail agencies are now being selected for unfilled territories. Interested merchants are invited to write for complete details or see us at the R. M. A. Show.

BOOTHS B-54 and B-55, BALLROOM, TUNG-SOL HEADQUARTERS, SUITE 1606, STEVENS HOTEL

TUNG-SOL RADIO TUBES INC. - NEWARK, N. J.

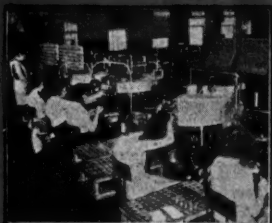
(Licensed under patents of Radio Corporation of America)

Sales Divisions: Atlanta, Baltimore, Boston, Charlotte, Chicago, Cleveland, Dallas, Detroit, Kansas City, Los Angeles, New York, St. Paul

"RADIO" for April, 1932. Volume 14. No. 4. 25c per copy. \$2.00 per year. Published monthly by Pacific Radio Publishing Co., Inc., Pacific Building, 821 Market St., San Francisco, Cal. P. S. Lucas, Editor. H. W. Dickow, Business Manager.
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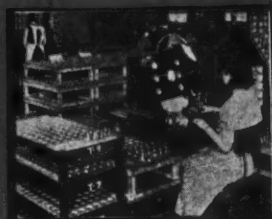
In their own secluded laboratory, these engineers, with slide rule, meter and microscope are always making improvements and double checking Certified Triad production.



Hundreds of skilled young ladies find interesting and profitable employment, making "small parts" for Certified Triads.



Many "batteries" of sealing machines controlled by highly skilled co-workers make Triads great production possible.



At the end of every production line, the tubes are given their first check. Ten characteristics are checked here. Even this is more than is done with the average tube, but it is not enough for "Double-Checked," Certified Triads.

PROTECTION

for SERVICEMEN

CERTIFIED TRIAD TUBES are the result of many years experience. All the guess-work has been eliminated. They are designed, manufactured and tested by the most modern machinery. They are produced by skilled operators. No better tubes can be bought.

A complete study of the proper method of merchandising tubes, in order to protect the seller as well as the buyer has resulted in the adoption of an entirely new form of distribution. The CERTIFIED TRIAD SERVICEMAN is the key stone. You can become one of the agents, who are taking a handsome profit from these tubes, by filling in the coupon. The whole interesting story will come to you by return mail.

If you are selected to represent TRIAD, we will protect your territory, for you. Every Tom, Dick and Harry will not be competing with you.



This is a reduced facsimile of the Triad Radio Tube Certification Coupon, which is sealed in the box with tube to which it refers.

and
CONSUMERS

Even a good radio receiver will sound like "nothing at all" if it is equipped with poor tubes. Most people realize that the radio tube is the heart of their receiver. Ordinary tubes can be bought for a song, but you usually get what you pay for. No one expects to get Cadillac or Lincoln service from an Austin. No one looks for custom-made shoes for three dollars. Those who expect the very best performance from inferior tubes are not logical and they are sure to be disappointed. No form of entertainment is as inexpensive as radio. Isn't it good business to keep it working at its best. You can be sure of doing so, by insisting on CERTIFIED TRIAD TUBES. A line to us will enable us to send you the CERTIFIED TRIAD SERVICEMAN, we have selected to serve your vicinity.

The TRIAD LINE is complete. It includes all types of standard Tubes as well as Photo-Electric Cells and Television Tubes

TRIAD TELEVISION & MFG. CO. Pawtucket, R. I.

Gentlemen,
Please send me complete information about your new Sales Plan for servicemen.

I have been a serviceman for.....years.
I sell.....tubes per year. I belong to the..... Serviceman's Association.
Name.....
Address.....
City..... State.....
My letterhead or card is attached.

Tell them you saw it in RADIO

MODEL
150

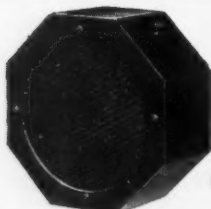


6½ inch Dynamic Speaker

MODEL
152



10¼ inch Dynamic Speaker



Single
Stud
Mounting

MODEL 154--Auto Speaker



MERSHON
Electrolytic
Capacitor

Stud
Type
Mounting

MAGNAVOX Electrolytic
Capacitors



Lug
Terminals

MAGNAVOX Electrolytic
Capacitor



Flexible
Lead Terminals

Magnavox

SPEAKERS AND CAPACITORS

Mer-shon

CAPACITORS

● MAGNAVOX SPEAKERS

Magnavox' 21 years of leadership in acoustics is significant. There is occasionally one manufacturer in an industry who will not compromise high standards of quality or performance, even in a price market and who continues to perfect and improve under all circumstances. The service which such a firm renders to the entire industry is apparent. Magnavox products which you may see at the R. M. A. Trade Show prove Magnavox' right to that position in the radio speaker industry.

● AUTO SPEAKERS

Magnavox engineering has mastered the tone problem—the most difficult in auto radio—and has added exclusive features assuring ease and simplicity of installation, with single stud mounting. Available in models 150 and 154, optional in wood or metal baffle cases.

● SPEAKER AND CAPACITOR COMBINATION

Illustration at the right shows the ideal adaption of capacitor and speaker combination mounting. Model 154 is shown with 2-8 Mfd. 450V. capacitors. This offers advantages both in space factor and ease of installing filter unit.

● MERSHON CAPACITORS

Improved, compact models in which space factor has been emphasized. Trouble-free—puncture-proof—self-healing—with a record of proven stability. Free from mechanical leakage. Made in several types of mounting for your convenience.

● MAGNAVOX CAPACITORS

Magnavox now offers a complete range of filter and By-Pass dry Electrolytic Capacitors in all standard capacities and voltages.

Magnavox engineering service is available to recognized manufacturers upon request, without obligation.

Welcome to the R. M. A. Trade Show
Speaker and Capacitor Headquarters

Stevens Exhibition Hall, Space 93-A. Stevens Demonstration Rooms,
704-A, 705-A, 706-A

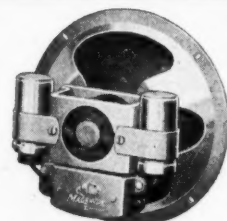
MAGNAVOX
MODEL 530
Dynamic Speaker

especially made and adapted
for Class B radio sets. See and
hear it at the R. M. A. Show.

MODEL
517



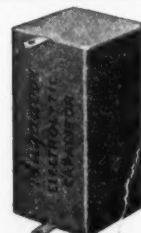
14 inch Dynamic Speaker



Speaker, Capacitor Combination

MERSHON
Electrolytic
Capacitors

Clamp
Type
Mounting



MAGNAVOX BY-PASS
Electrolytic Capacitor

Magnavox Company Ltd.

ESTABLISHED 1911

GENERAL OFFICES AND FACTORY, FORT WAYNE, INDIANA

Subsidiaries

THE MAGNAVOX COMPANY, ELECTRO FORMATION, INC.,
MAGNAVOX (AUSTRALIA), LTD., MAGNAVOX (GREAT BRITAIN), LTD.

Sentinel ALL-WAVE



Sentinel No. 125 Eight-Tube All-Wave Superheterodyne Console, with Automatic Volume Control and Tone Control. Furnished in a beautiful six-legged walnut cabinet of Tudor design. List price, with tubes **\$8950**

13 to 550 Meters With Only One Knob

Here is the all-wave set for which you have been waiting. A triumph of tuning simplicity and radio performance. Four bands all calibrated on one dial. Complete control of dial with a single two-speed knob. Special band selector switch. Eight-tube superheterodyne. Greatly improved automatic volume control. All parts mounted on a single chassis pan. Matched electrodynamic speaker.

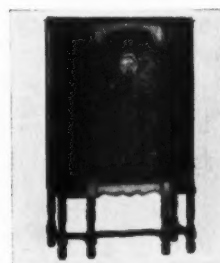
These features will answer your demand for a practical all-wave set. Send for complete information.



No. 118 Ten-Tube Superheterodyne Console with Automatic Volume Control and Tuning Meter. Deluxe walnut semi-Tudor cabinet with doors. Full-vision dial. Tone control. List price, complete with tubes **\$9950**



No. 120 Eight-Tube Superheterodyne Console, with Automatic Volume Control. Walnut Tudor cabinet. Full-vision dial. Tone control. List price, complete with tubes **\$7950**



No. 116 Five-Tube Superheterodyne Console. A big value in a small set. Full-vision dial. Tone control. Complete, with tubes **\$5650**



No. 110 Seven-Tube Superheterodyne Console. Walnut Tudor Cabinet. Full-vision dial. Tone control. List price, complete with tubes **\$6250**



No. 116 Five-Tube Superheterodyne Table Model. Same chassis as above in a neat burl walnut cabinet. **\$3995** Price, complete with tubes



No. 110 Seven-Tube Superheterodyne Table Model. Same chassis as above. Big-set performance in an attractive walnut cabinet. List price, complete with tubes **\$4675**

Sentinel offers you the most up-to-the-minute line in radio. A complete range of models. Each set upholds the Sentinel name for outstanding performance and value. Furnished as complete sets, or chassis only. Wire or write for samples; also for new sales plan for jobbers and dealers.

SENTINEL RADIO DIVISION
UNITED AIR CLEANER CORP.
9705 Cottage Grove Ave., Chicago, Ill.

Sentinel
SURPASSING RADIO PERFORMANCE

~TONE QUALITY~SELECTIVITY~SENSITIVITY~CONSTRUCTION~

Tell them you saw it in RADIO

NOW.. A Wright-DeCoster Auto Speaker at a Low Price the MIDGET!

Built up to true Wright-DeCoster standards of quality designed especially to overcome the difficulties of getting proper reproduction in automobiles.

The lack of undesirable harmonics in the Midget Speaker is largely responsible for its good reproduction when used with auto radio output tubes.

The single stud mounting not only makes this Auto Speaker easy to install, but allows the installation to be made in many places where it would be impossible to install a speaker with any other type of mounting.

The felt lined metal cabinet has all the acoustical advantages of being made of a soft deadened material with the durability of metal construction.

It is essential to have any automobile speaker thoroughly dust-proofed, yet many methods of dust-proofing are anything but efficient. This Midget Speaker is most thoroughly dust-proofed in every respect as the necessity for dust-proofing was constantly kept in mind when it was designed.

When ordering, be sure to let us know the type of output tubes being used.

Dimensions of cabinet, diameter 9 inches, depth 4 inches. Weight boxed for shipment, 9 pounds.

Price, Midget Reproducer complete in cabinet - - \$9.25
Midget Auto Chassis only - - - - - \$7.50

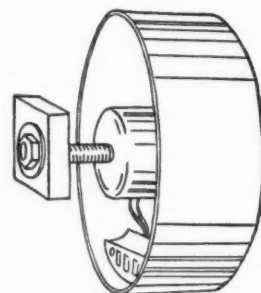
WRIGHT-DECOSTER, INC.

2217 UNIVERSITY AVENUE, ST. PAUL, MINN.

Export Department: The M. Simon & Son Co., New York
Cable Address: "Simontrice"



MIDGET CHASSIS
Model 245



Showing how the Midget speaker is installed in the single stud mounting cabinet.



"THE SPEAKER
OF THE YEAR"

Make this amazing test.. *yourself!*

Now! You can prove to yourself how easy it is to solder aluminum or any other metal. Along with your kit of Alumaweld, we will send you two small sheets of aluminum. Lap these together as shown in the above drawing. Place a small amount of Alumaweld solder and flux along the lap. Then hold over a flame.

In less than ten seconds the flux will boil and smoke and the two pieces will be welded together!

Try and pull them apart. Use your hands—then pliers. You will tear the aluminum to shreds, but you will not be able to tear the two pieces apart.

Imagine what this means! You have welded aluminum without an acetelene torch—at a temperature of 370 degrees F. In this same, simple manner you can handle any metal in use today.

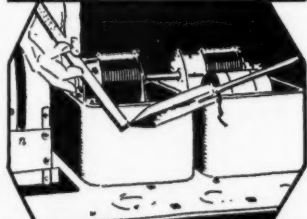
Alumaweld has hundreds of uses in radio work. It is used for soldering copper wires to aluminum—for joining aluminum cabinets—for aluminum shields—for cast iron, pewter, copper and bronze.



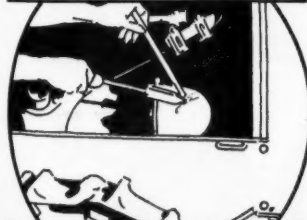
At Last! Aluminum can be soldered!
ALUMAWELD
ALL METAL SOLDER
will repair any metal.
ALUMINUM • POT METAL
STEEL • CAST IRON etc
Ten Times as strong as ordinary solder!



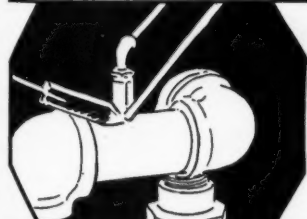
AUTO SHOP



RADIO WORK



FARM USES



PIPE REPAIRS



MARINE

Alumaweld is heralded as the most revolutionary discovery in an age. Over 200 magazines have described this solder in their columns. The very largest concerns in the country are numbered among its users. And the product is less than six months old!

In factory—repair shop—or home workshop—Alumaweld saves time and money. It is applied with an ordinary soldering iron or blow torch—so simple that anyone can use it. Its strength is over ten times that of ordinary solder. It is a real **ALL METAL SOLDER**, for any job.

In spite of the fact that Alumaweld does work that has never been done before, it is priced very moderately. A good sized kit, containing seven sticks of solder, one bottle of Alumaweld flux, one tempered steel cleaning brush, two pieces of sheet aluminum for test purposes and complete, **EASILY FOLLOWED DIRECTIONS**, sells for one dollar. Send for one today. Make the welding test. If you are not entirely satisfied—for any reason whatsoever—we will refund your money.

ALUMAWELD CO.

710 E. Broadway

Glendale, Calif.

Alumaweld REPAIRS

Crank cases,
burst water jackets,
vacuum cleaners,
washing machines,
radio sets,
auto bodies,
farm implements,
pots and pans,
aeroplane engines,
outboard motors,
steam radiators,
water pipes
and steam pipes,
and all general
machine shop or
sheet metal repair.

It will repair ANY
METAL easily, perfectly
and lastingly.

AGENTS! DEALERS!

Make good money handling Alumaweld. Agents and dealers report ready sales and big profits. Write for our up-to-the-minute sales plan. Use the coupon below.

ALUMAWELD CO., Dept. 13,
710 E. Broadway, Glendale, Calif.

Gentlemen:

Mail me immediately a complete kit of Alumaweld, containing seven good sized sticks of solder, a bottle of flux, a tempered steel cleaning brush, two aluminum strips for test purposes, and complete, easily followed directions, for which I am enclosing one dollar. If for any reason I am not satisfied, you agree to refund my money—without question.

☐ Check here if you want agent's proposition.

Name.....

Address.....

Town and State.....

Tell them you saw it in RADIO

AUTOPAL

"The Unseen Companion"

This Is the Set That Conquered Death Valley

HERE, at last, is a motor radio that eliminates all sales resistance. Enclosed in a handsome walnut cabinet, with Magnavox full dynamic speaker, four pentodes and triode amplifier. Equipped with special neutrafilter, playing on as low as 45 volts of "B" (16 milamp current drain. Two ampere storage battery drain). It is instantly and easily installed in any car—no brackets, no holes to drill or dash or cowl to cut and mar—and sensationally low priced.

Check the features listed here in addition to those already mentioned. With FINGERTIP CONTROL, there are no cables, gears or friction devices to fail. UNIT CONSTRUCTION means accessibility for service. The AUTOPAL can be easily removed for use in camp or cabin, or can be placed on running board while parked. Extension cable of any length can be used. Located away from coils and wires, its operation is amazingly quiet. The Primotune AutoPal circuit enables it to pull in distant stations and operate in "tough spots" where others fail.

Sell them AUTOPAL, the same as you sell house radios. Demonstrate in their cars in one minute—with extension cable to the curb. But don't wait until the vacation season has passed. Now is the time for profit! Write, wire, or phone TODAY!

check these

Fingertip Control
No Tools Required
Unit Construction
Removable
Quiet Operation
Distance Getting
SALABILITY

WIRE OR PHONE FOR
FRANCHISE
OR TERRITORY
STANDARD DISCOUNTS
Samples, cash with order
only

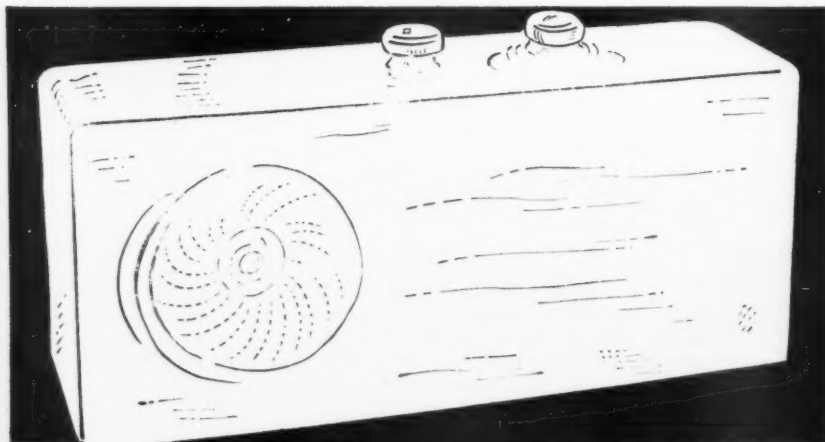
Northwest Representative
H. C. Gray
2011 Miller St., Seattle, Wash.

Eastern Division
American Radio & Television
Co., Urbana, Illinois

AMERICAN RADIO & TELEVISION CO.

4917 South Western Ave.
Los Angeles

Vermont 9332



See Us, Radio Show, Stevens Hotel, Chicago

Tell them you saw it in RADIO



\$ **29**⁵⁰

Complete with tubes
Less "B" Batteries
3 Required

A Radical Improvement in Condenser Design by **CONCOURSE**



THE NEW FEATURES:

- Working voltage 450.
- Peak voltage 600.
- Smaller in size.
- Greater in efficiency.
- Ribs and vanes increase cooling capacity; increase operating efficiency.
- Most simple to mount.
- Note convenient mounting feature.
- Easily fits into smallest chassis, without loss of efficiency. High over-all efficiency and very low power factor.

CONCOURSE Condensers are available in either metal or cardboard containers, in high and low voltage types.

MANUFACTURERS of radio receivers, from the smallest vest-pocket midget to the largest console, are coming to CONCOURSE for condensers. The new CONCOURSE line, which has just been placed on the market, offers the manufacturer and dealer a wide choice of condensers for initial installations as well as for replacement purposes. The compactness of the CONCOURSE condenser is equalled by its extreme efficiency and the service which it gives. Its many time-saving features are acclaimed by those who service sets. The diminishing profits from service in the low priced midget field calls for replacement condensers which can be installed quickly—accurately—simply. Once you use a CONCOURSE you will never be satisfied with other brands. The new container is heavily ribbed which prevents much of the annoying denting of condenser cases. The CONCOURSE installation is a BUSINESS-LIKE installation. And the metal can with its ribs and vanes further aids in the cooling capacity . . . a vital factor in receivers where the many small parts are so closely crowded together. But, most important of all is the new smaller size of the CONCOURSE condenser. The space-saving feature appeals strongly to those who manufacture the very small type of receivers. Nothing has been sacrificed in the reduction in size. CONCOURSE condensers have very low power factor and low electrical leakage. The ever-growing demand for CONCOURSE prompts you to write us immediately for samples and specifications. Last year they said—"CONCOURSE, OF COURSE." This year it's the same, in even greater volume. Every month more and more manufacturers, dealers and service men are switching to CONCOURSE. There IS a reason. You, too, are invited to call on us to prove our claims.

CONCOURSE
ELECTRIC COMPANY
387-411 WALES AVE., NEW YORK CITY, N. Y.
ON THE COAST:

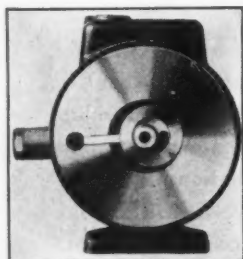
Pacific Coast manufacturers, dealers, jobbers, service shops, etc., can communicate direct with R. J. NOEL CO., Los Angeles and San Francisco Concourse Factory Representatives.

Tell them you saw it in RADIO

Norge Rollator Refrigeration Offers Many Exclusive Refinements

"Voir" Family Different—Sales Continue to Gain—1931 Showed 460% Increase as over 5,000 Dealers Put Shoulders to Wheel

THE Electric Refrigeration Industry's total increase during the past year was 115,000 units over 1930. Of this total, Norge sold 52,000 units—or, almost 50% of the total for the industry.



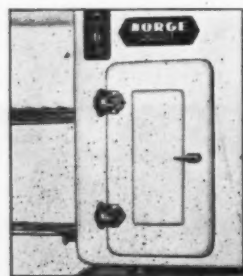
Norge Rollator. Only 3 moving parts in a permanent oil-bath.

The dollar volume increase for the entire industry was \$15,220,000. Of this, the Norge increase was \$10,000,000, or 65% of the total.

This remarkable showing places Norge in a highly strategic position, well up among the leaders, and was based upon the simple formula which combines the right product with the right merchandising and advertising.

* * * *

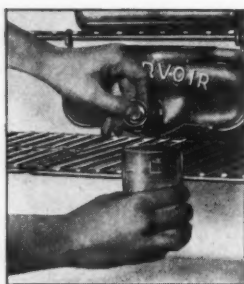
NORGE possesses a number of features which make it outstanding. Many of the now standard features were originated by Norge engineers and given the industry for the good of all.



Cold control inside Norge cabinet, above ice-compartment door... "tamper-free."

Chief among the exclusive attractions of a Norge Rollator Refrigerator are members of the "Voir" Family—a series of specialized accessories found only on the Norge.

Another exclusive feature of the Norge is the Rollator. This is a compact rotary compressor with only three moving parts, all turning slowly



Full gallon capacity Watervoir; keeps cold drinks on tap.

in a permanent bath of oil. Wear is a factor in Norge performance, for the longer the rollator runs the better it "wears in" and thus becomes even more efficient as it is used!

Rounded inside corners make for utmost ease of cleaning and help to promote sanitation in the home. The ice-making unit is enclosed in a porcelain cabinet, with door. Above this unit is mounted the cold control, so that the housewife need never worry that children have tampered, or accidental brushing-by has reset the freezing-speed.



Inside rounded corners mean easy cleaning of interior.

The Watervoir is a full one-gallon capacity beverage container. Of tough glass, the inside corners are rounded and a large filling-hole permits the entire hand to fit in with a cloth for quick, easy cleaning. A handy tap makes the cold drink immediately available (see illustration at top of this column).



Major Howard E. Blood, president and general manager, Norge Corporation.



John H. Knapp, vice president and director of sales, Norge Corporation.

The Preservoir is another Norge exclusivity. This is a food preserving tray located just below the freezing com-



Icevoir makes ice-bars twice the size of cubes; no water touches them as they are made ready for use. Fully patented and exclusive to Norge.

partment. Here meats and other perishables or frozen desserts are preserved until wanted.

Still another Norge refinement is found in the ice-making compartment. Optional are Icevoir trays which freeze nine bars, each just the size of two ice cubes. This is unique in that no water touches the ice, when the bars are being removed. Thus the full ice bar goes into the glass, without the usual fuss and bother.

Norge shelves are designed to slide out on bakelite buttons. They are of flat ribbon construction and coated with porcelain, so that corrosion is impossible.



Flat ribbon shelves, porcelain covered; slide on bakelite buttons.

A classic cabinet design makes Norge attractive when placed in the kitchen, regardless of other furnishings. And a wide range of models makes it possible to satisfy every family requirement.

* * * *

THE Norge sales organization numbers more than 15,000 men. Distribution is national. Advertising appears in national magazines, in city and local newspapers, in trade-papers and over the air. The Norge merchandising plan has been proved successful in every territory.

YOU - - - are in a "Radio Show" every day!

The older the radio, the more service calls, and the better the judgment of the owner in analyzing service skill. To win out in the daily radio show you need modern testing equipment, and it's more economical to have the best, particularly the most efficient and positive instrument in radio development

SUPREME DIAGNOMETER AAA 1

5 ultra modern testing instruments **1**
in 1 for the price of

SUPER DIAGNOMETER, plus SHIELDED OSCILLATOR, plus ADVANCED TUBE TESTER, plus OHM-MEGOHMMETER, plus CAPACITOR TESTER - - - 5 essential instruments in one at the price of one.

SUPREME TUBE CHECKER MODEL 40



COUNTER TUBE CHECKER - - - "SUPREME BY COMPARISON"

Dealers' Net Price F.O.B. Greenwood, Miss. **\$30.00** Portable type **\$3.00** extra

Distributors in all Principal Cities
Foreign Division, 130 West 42nd St., New York City
Cable Address: LOPREH, New York



Dealers' Net Price
f.o.b. Greenwood, Miss.

\$147.50

SUPREME SET ANALYZER MODEL 90

The famous one meter set tester that offers some of the unequalled features of the AAA 1 Diagnometer . . . and all of its own famous 1932 superiorities.

Dealers' Net Price F.O.B. Greenwood, Miss. **\$78.50**

SUPREME OSCILLATOR MODEL 70

A thoroughly shielded, completely attenuated Oscillator . . . output meter . . . high resistance ohmmeter.

Dealer's Net Price f.o.b. Greenwood, Miss., less tubes and batteries . . . **\$49.75**

SUPREME OUTPUT OHMMETER **\$30.00**

Handsome Carrying Case for both and Accessories **\$5.00**

SUPREME OSCILLATOR MODEL 60

HANDY OSCILLATOR -- SUPREME VALUE

Dealers' Net Price F.O.B. Greenwood, Miss. **\$30.00** Portable type **\$3.00** extra

Ask Your Jobber for Demonstration

All good Jobbers can demonstrate the unmatched serviceability of SUPREME TESTING INSTRUMENTS. If yours can't, send this coupon for complete information on instrument, or instruments, most interested in.

SUPREME INSTRUMENTS CORPORATION
435 Supreme Bldg., Greenwood, Miss.

Please send me full particulars on ☐ Supreme Diagnometer AAA1
☐ Supreme Set Analyzer Model 90
☐ Supreme Oscillator Model 70
☐ Supreme Oscillator Model 60
☐ Supreme Tube Checker Model 40

Name _____
Address _____
City _____ State _____
Jobber's Name _____
City _____ State _____

Tell them you saw it in RADIO

MAY-JUNE LEADER



ILLUSTRATED IS THE
NEW 6 TUBE EL REY
SUPER RECEIVER.

\$16⁹⁵
NET
LESS TUBES

CASH WITH ORDER

EL REY—The King

**6 Tube
SUPER
\$16⁹⁵**

NET
LESS TUBES
CASH WITH ORDER

**4 Tube
T. R. F.
\$6⁹⁵**

NET
LESS TUBES
CASH WITH ORDER

10 Tubes (in 2 Midget Radios) for \$23.90

Viz.:—4 Tube Cub, \$6.95	.	.	.	.	\$ 6.95
6 Tube Superheterodyne	.	.	.	.	\$16.95
					<hr/> \$23.90

See our other ad in this issue of Radio for our New Auto Set.

Shipped C. O. D. only, and as shown, two sets for \$23.90, less tubes.
Guaranteed from factory for ninety days.

EL REY MANUFACTURING COMPANY

8406 SO. BROADWAY

Phone PLeasant 9750

LOS ANGELES, CALIF., U. S. A.

PRC
ALL WAVE Radio
THE VOICE OF ALL CONTINENTS
ON A SINGLE KNOB !!

\$54⁵⁰
LIST

COMPLETE with
SPEAKER and TUBES

10 TUBES

AN opportunity for you to make 1932 your biggest year
... take advantage of this wonder line. Features not found even in sets
selling for double the price... *World-wide Reception* on a single knob.
All the newest tubes... push-push Audio with two of the new 46 tubes...
accurate 10 kilocycle selectivity... Automatic Volume Control and the
sensational new *WUNDERLICH* tube
which makes this 10 tube set equal to **12 TUBES!**

Two full Intermediate Frequency Stages, four gang con-
denser, 10 tubes in all and all tubes working. Not a con-
verter, but a real honest to goodness performer.

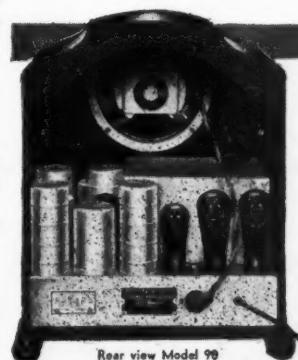
TEN TUBES, 15 TO 550 METERS
WORLD-WIDE RECEPTION
ALL LATEST TUBES

Be the first in your community to sell the Patterson All-Wave
Superheterodyne — the set that makes all others obsolete.
CASH IN on the National Advertising of all wave reception
which will begin immediately.

Sell the chassis, tubes and speaker to your customers to
install in their own cabinets. They will

BUY A MODERN RADIO

Write, wire or phone today for your low net prices. You'll be
amazed! **HURRY!**



Rear view Model 90

MODEL 90 — Compact
of walnut. Burl front panel.
18 in. high, 15 in. wide,
10 in. deep.

\$59⁵⁰
WITH
TUBES

Do not confuse this
chassis with the so-
called Midget. It
is full size in every
respect.



MODEL 95—Console of
walnut. front panel of
burl. 44 in. high, 25 in.
wide, 15 in. deep.

\$79⁵⁰
WITH
TUBES



MODEL 92—Console of
walnut. Burl front panel.
40 in. high, 24 in. wide,
15 in. deep.

\$69⁵⁰
WITH
TUBES



MODEL 91—Console of
American walnut. 38 in.
high, 23 in. wide, 14 in.
deep.

\$64⁵⁰
WITH
TUBES

R.C.A. Licensed

This is an...
**ALL-WAVE
YEAR**

Patterson
Radio Company
1320 So. Los Angeles St., Los Angeles

Builders of
QUALITY RADIO
SINCE 1920



PATTERSON RADIO COMPANY
1320 South Los Angeles Street
LOS ANGELES
Send full particulars of the new PATTERSON
ALL-WAVE SUPERHETERODYNE.

Name _____
Street _____
Town _____
State _____

Tell them you saw it in RADIO

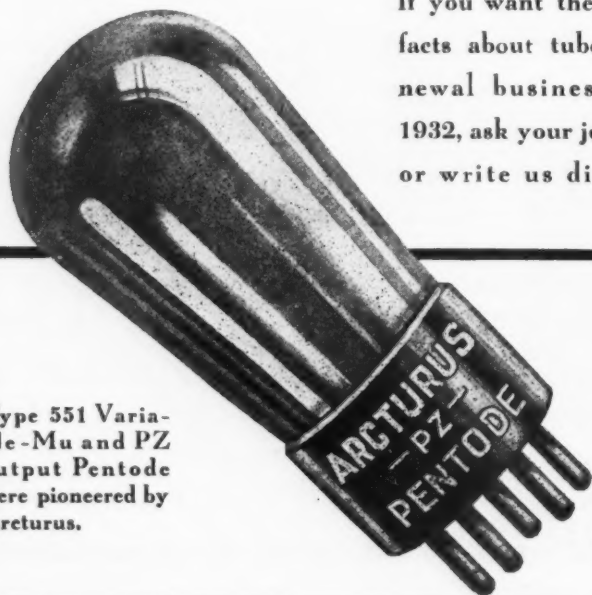


Calling all cars!

L. D. CONE, KGPL Announcer, Los Angeles Police Department Radio Station.

Arcturus Blue Tubes are commanding the attention of a radio-conscious world everywhere. Endorsing its merits are imposing lists of engineers, manufacturers, retailers, and most important of all, set owners...your customers. Arcturus' Quick Action, Clear Tone, and Long Life mean customer satisfaction...an asset that pays any dealer.

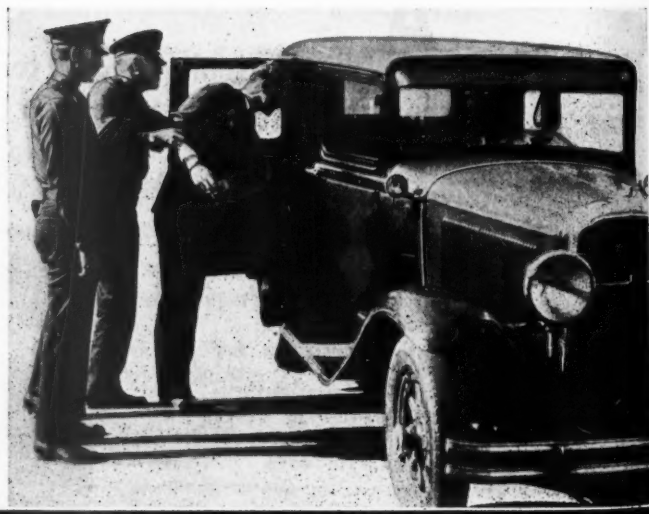
If you want the real facts about tube renewal business in 1932, ask your jobber or write us direct.



Type 551 Variable-Mu and PZ output Pentode were pioneered by Arcturus.

A word! A flash! A whole city stirs to action, and radio...society's greatest curb on lawlessness...is the first to answer the call. Speed...*action*...**DEPENDABILITY**...all are needed when desperate criminals are at large and precious moments count.

Riding in thousands of police radio cars throughout the country are Arcturus *Blue Tubes*... answering the call to duty with quick action and perfect performance.



ARCTURUS

"The BLUE TUBE with the LIFE-LIKE TONE"

ARCTURUS RADIO TUBE COMPANY • NEWARK, N.J.
Western Division: 1855 Industrial Street, Los Angeles

Raditorial Comment

By The Editor

Welcome - - the Trade Show!

THIS issue of "Radio" is dedicated to the eighth annual trade exposition which will be opened by the Radio Manufacturers Association on May 23rd at Chicago. While its pages contain much of the latest information on the many new things to be exhibited there, the greatest benefit will be derived from the show by those who attend it in person, especially as some manufacturers are hiding their trump cards until the doors of the exposition are officially opened to the trade.

Advance information indicates that nothing will be shown to make obsolete the present lines of radio receivers of broadcast speech and music. There will be many minor refinements, such as improved methods of automatic volume control to prevent blasting from strong signals while tuning for weak stations. There will be new types of tubes, particularly rectifiers designed to deliver more plate current to the amplifying tubes. Such improvements as are introduced will be largely common property.

"Trump Cards" will not be played until doors of show are opened

SOME big surprises are expected, however, in television receivers. Manufacturers have requested strict secrecy as regards the nature of these innovations, but enough information has "leaked" to indicate that there is a basis for a heavy Fall campaign in the sale of radio movie receivers, either as separate instruments or in combination with a sound receiver. Details regarding these new means for home entertainment will be given in June "Radio".

It is evident that low prices will be continued as a sales factor for the balance of the current year, whether you like it or not. The times are not yet propitious for price-boosting. With universally low prices, all manufac-

turers will be much on a par. The real distinction between them will reside in their sales plans, which are the most comprehensive and effective ever proposed to the radio industry. In the selection of the lines which he is to push, the dealer will be governed more by the factory sales plan than by the product or price.

Sales Plans will be analyzed in future issues of "RADIO"

EACH of these plans are to be explained in detail during the show. Each is designed to help the dealer sell more merchandise at better profit. They embody optimism and persistence as the means for overcoming sales resistance. In the technical parlance of radio, sales are being impeded more by the reactance of lost confidence than by the resistance of poverty. Restoration of confidence will clear the clogged sales channels and bring out the hoarded dollars.

So this year's show actually becomes a university of sales education for the dealer, with the best sales managers in the country as the teachers. The greatest benefit can be secured by personal attendance. While the actual attendance may not be so large as in past years, those who do attend will be there for the serious purpose of study and not for play. The manufacturers realize this fact and have prepared a worthwhile course of instruction with just enough relaxation to prevent Jack from becoming a dull boy.

For those unable to attend, this and the following issue of "Radio" will provide helpful information. The various sales plans will be analyzed and interpreted so that the dealer can form his own judgment as to what lines can be sold most profitably.

[Many new products, not shown in this issue because of secrecy requested by the manufacturers, will be illustrated and described next month. **]**

RMA Trade Show List

Exhibit Space and Hotel Rooms

{ "B" designates Grand Ball Room, Stevens Hotel. }
 { No letter designates Exhibition Hall, Stevens Hotel. }

	<i>Booths</i>	<i>Demonstration Rooms</i>
Adler Manufacturing Co.	B34	1504-1505-1506-1507
Aerovox Wireless Corp.	79	805A-806A
All-American Mohawk Corp.	50-51-52-53-54	500-501-501A
Atwater Kent Manufacturing Co.	811-812-813-814	700-701-701A
Audiola Radio Co.	86	632A-633A-634A
Belden Manufacturing Co.	B19	1818-1819-1820
Belmont Radio Company	105	
Bond Electric Corp.	62	519A-520A
Bud Radio, Inc.	B18	628-629A-630A
Burgess Battery Company	30-31	
Cable Radio Tube Corp.	40	718-719-720
Capehart Corporation	101-102	1600-1601-1601A
CeCo Manufacturing Co., Inc.	B52	2200-2201-2201A
Central Radio Laboratories	110	550A
Clago Radio Corporation	64	704-705-706
Colonial Radio Corp.	33	512-513
Columbia Phonograph Co., Inc.	B64-65-66	509
Crosley Radio Corporation	72-73-74-75-76	2300-2301-2301A-2302-2303-2304
Crowe Name Plate & Mfg. Co.	81	
E. T. Cunningham, Inc.	45-46-47	
Credit Clearing House Corp.	37	
De Forest Radio Company	B15-16	
Tobe Deutschmann Corp.	38	
Echophone Radio Mfg. Co., Ltd.	B5	556A-557A
Electrad, Inc.	B4	
Electromatic Record Changer Corp.	59	532A
Elkon, Div. P. R. Mallory & Co.	B17	718A-719A-720A
H. H. Frost, Inc.	112	
Galvin Mfg. Corp.	29	800-801
General Dry Batteries, Inc.	B26	
General Electric Company	B59-60-61-62-63	
General Industries Company	57	
General Radio Company	B9	
Gilby Wire Company	35	
Gulbransen Company	B20-21	1000-1001A-1002A-1001-1002
Hammarlund Mfg. Co.	129A	
Hawley Products Company	129	
Hickok Electrical Instru. Co.	84	
Howard Radio Co.	55-56	
Hygrade Sylvania Corp.	B1-2-3-3A-3B	
Insuline Corp. of America	111	524A-526A
International Radio Corp.	B56-57	
Jackson Bell Co., Ltd.	39	
Jensen Radio Mfg. Co.	B10	537A
Colin B. Kennedy Corp.	41-42	
The Ken-Rad Corp.	87-88	600-601-601A
Kester Solder Company	34	
Kolster Radio, Inc.	114-115-116-117-118	1400-1401-1401A

Exhibitor

Lenz Electric Mfg. Co.
Magnavox Company, Ltd.
Micamold Radio Corp.
The Muter Company
National Carbon Co., Inc.
National Credit Office
National Union Radio Corp.
Operadio Mfg. Co.
Philadelphia Storage Battery Co.
Pierce Airo, Inc.
Pilot Radio & Tube Corp.
Polymet Manufacturing Corp.
Radio Condenser Co.
Radio Products Co.
RCA Radiotron Company, Inc.
RCA Victor Company, Inc.
Readrite Meter Works
Revere Radio Corp.
The Rola Company
Silver-Marshall, Inc.
The Sparks-Withington Co.
Standard Transformer Corp.
Stewart-Warner Corp.
Stromberg-Carlson Tel. Mfg. Co.
Transformer Corp. of America
Triad Mfg. Co., Inc.
Tung-Sol Radio Tubes, Inc.
United Air Cleaner Corp.
United American Bosch Corp.
U. S. Radio & Television Corp.
Utah Radio Products Co.
Webster Electric Co.
Weston Electrical Instr. Corp.
Wright-De Coster, Inc.

Booths

85
93A
104
49
B44-45-46-47-48-49
107
B7-8
B58
B67-68-69-70-71-72-73-74
80
94
B50-51
B23
B53
B27-28
89-90-91-92-93
32
B6
48
B24-25
B29-30-31-32-33
103
65-66-67
B77-78-79-80-81
69-70-71
B22
B54-55
77-78
96-97-98-99
B35-36-37-38-39-40
B42-43
B41
63
100

Demonstration Rooms

704A-705A-706A
611A-612A-613A
805-806

1200-1201-1201A

619-620

560

1405A-1406A
502A-504A-505A-507A-509A
502

539A
533-534-536
504-505-507

1404-1405-1406-1407
622-623-619A-620A

516
2105-2106
604A-605A-606A-607A
512A-513A
556-557
521A-523A



Some of the New Things at the Show

- Auto Radios operating on low "B" voltage, using the new tubes, and capable of bringing in police calls.
- A complete new line of "dome type" tubes of vastly improved efficiency.
- New low-priced sets using the new tubes. Performance tremendously increased.
- Cathode Ray Television Tubes and Mercury Vapor Rectifiers.
- Short-long wave combinations with perfected I dial control.
- Refrigerators in the less-than-one-hundred-dollar price class.
- Wide choice of phono-radio combinations for the long-playing records.
- Sound equipment of more compact size and lower price.
- Perfected low-priced "B" eliminators for auto radio.

NOTICE—To distributors of electric refrigeration and others who are considering entering this field

Do You Want the "LOW-DOWN" on Merchandising Electric Refrigerators?

MERCHANDISING ELECTRIC REFRIGERATORS

*A Handbook of Information
for
Retail Store Owners
their Sales Managers and
Salesmen*

PRICE \$1.00

Published by
**National Ass'n of Radio, Refrigeration
and Electrical Distributors, Inc.**
32 WEST RANDOLPH STREET
CHICAGO, ILL.

**NATIONAL ASSOCIATION of
RADIO, REFRIGERATION and
ELECTRICAL DISTRIBUTORS,
INC.**

32 West Randolph Street
Chicago

H. G. Erstrom, Executive Vice-President

Do you want the boiled-down essence of all the essential facts regarding:

Opportunities for Sales and Profits.
Refrigeration.
Electric Refrigerators.
Organizing to Sell Electric Refrigerators.
Getting Orders.
Handling Satisfied Users.
Hints on Service.

Do you want to set a new standard in constructive helpfulness in showing your dealers and their sales people the "How" and "Why" of Merchandising Electric Refrigerators?

Send for This Book

Mail in your check for \$1.00 for an examination copy. You can buy additional copies at a very attractive discount. Read it. Submit it to the test of its practical value to *you* as a wholesaler, to your salesmen, to their dealers and to dealers' salespeople. If you do not think it is the biggest dollar's worth of sales-building and profit making Electric Refrigerator information you have ever seen, return the book and we will return your dollar.

MAIL YOUR ORDER TODAY

National Association of Radio, Refrigeration,
and Electrical Distributors, Inc.
32 West Randolph St., Chicago, Ill.

Herewith please find \$1.00, for which please send me examination copy of "Merchandising Electric Refrigerators." If within 5 days I return the book, I will get my dollar back.

Name.....
Company.....
Street.....
City.....
State.....

3-16-18-H

MODEST TRIAD FACTS



THERE ARE NO BETTER TUBES

"Modesty Forbids" our claiming to have the "Best".

THERE IS NO MORE MODERN LINE

"Modesty Forbids" our mentioning that tubes, like the 210-S, were first made by us.

THERE IS NO MORE PROFITABLE LINE

"Modesty Forbids" our referring to our increasing number of price-maintaining sales outlets.

THERE ARE NO MORE "REPLACEMENTS"

"Modesty Forbids" our calling attention to returns during last year (Sh-h-h!! less than two per cent—including breakage in transit).

THERE IS NO FASTER GROWING LINE

"Modesty Forbids" our saying anything about the 300 per cent gain in sales for the first quarter of this Year, over 1931.

THERE IS NO MORE PROGRESSIVE LINE

"Modesty Forbids" our telling you about the seventeen new types we have announced, including photocells, television, short wave, ultra short wave and "amateur" use.

THERE IS NO BETTER EQUIPPED PLANT

"Modesty Forbids" our letting you know that our engineers are men of long experience and, under their capable direction, our modern machines can produce 30,000 "Honorbuilt" Triad Tubes a day.

THERE IS AT LEAST ONE TUBE COMPANY

"Modesty Forbids" our uttering the fact that Triad was first to recognize the importance of the "serviceman" and the small country dealer as a most important moulder of tube consciousness and developer of sales which stay sold.

BUT—

There Isn't A Single Reason Why You Should Not Learn The Reason.

TRIAD TAKES OFF ITS HAT

TO NOBODY.

Triad Manufacturing Co., Inc.

Pawtucket, R. I.

BOOTH 22
BALLROOM
STEVENS
HOTEL
RMA TRADE
SHOW
CHICAGO

PHILCO—A Musical Instrument of Quality



Model 15DX, \$250.00



Model 15X, \$150.00

15 D-X

This is PHILCO'S finest model—a deluxe cabinet of surpassing beauty—of regal elegance—and of supreme quality. It is the very finest cabinet ever developed for radio, done in a rare combination of American Black Walnut, highly figured Butt Walnut with panels of Myrtle Burl, the instrument panel being enclosed with tambour sliding doors. The bow front and ornamental work are hand-carved out of solid walnut and the entire set is hand-rubbed. Inclined Sounding Board, Echo-Absorbing Screen, Twin Speakers, Shadow Tuning, Tuning Silencer, 11 Tubes, 6 Pentodes, Automatic Volume Control, Illuminated Grille, etc. \$250.00.

15-X

This is one of the finer X models and is solidly constructed to protect against any microphonic disturbances with heavy ends and tops and an especially constructed solid base. The entire front of this cabinet is highly figured matched Butt Walnut, inlaid with Satin and Ebony colored woods. The four

beautiful fluted front columns are an added feature of this design. The highly figured Butt Walnut in this cabinet distinguishes the model as a really fine musical instrument. Height 42½ inches; width 27⅞ inches.

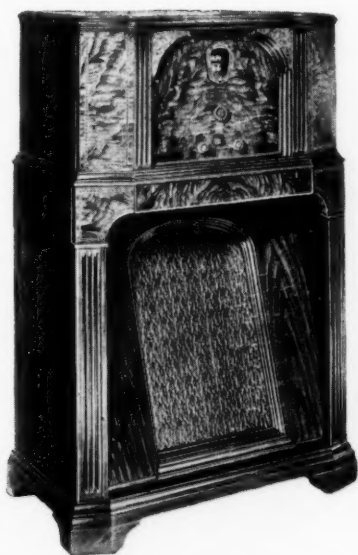
\$150.00—Twin Electro Dynamic Speakers, Shadow Tuning, eleven PHILCO HIGH EFFICIENCY TUBES, including six Pentodes, Tone Control, Automatic Volume Control, Tuning Silencer, Distance Switch, Illuminated Station Recording Dial, Illuminated Grille, and every other worthwhile improvement in radio.

1. The PHILCO Inclined Sounding Board throws all sound up into field of listener, making all high notes heard for the first time.
2. Large area of sounding board insures full reproduction of low notes.
3. Echo-Absorbing Screen at the back prevents echo and blur, the first radio to deliver sound only from front of speaker.
4. Open sounding board instead of sound chamber affords clear unboxed tone. Patented.

A model for every need \$37.50 to \$295.00

PHILCO : PHILADELPHIA : TORONTO : LONDON

PHILCO—A Musical Instrument of Quality



Model 91X, \$100.00



Model 23X, \$195.00
Radio Phonograph, \$295.00

91-X

This is the smallest of the famous X models of Philco. It is large enough to reproduce with the richness of a great instrument, and yet small enough to conveniently take its place in the average home or apartment. This cabinet is also solidly constructed for protection against microphonic disturbances through resting upon a specially constructed solid base reinforced by heavy ends and top in the cabinet. Highly figured matched Butt Walnut inlaid with Satin and Ebony colored woods, forms the front of this cabinet and makes it a worthy number of the X group. Instrument panel of Butt Walnut and Myrtle Burl. Height 40 $\frac{5}{8}$ inches; width 26 $\frac{5}{8}$ inches.

\$100.00—Inclined Sounding Board, Shadow Tuning, Tuning Silencer, Twin Speakers, Echo-Absorbing Screen, 9 Tubes, 4 Pentodes, Automatic Volume Control, etc.

\$100.00—8-Tube receiver for Direct Current, in similar cabinet with Inclined Sounding Board.

23-X

An extraordinary cabinet which stands alone in all radio for its individuality. The X principle is combined with the phonograph in this perfectly proportioned cabinet. Doors are of Crotch Walnut, that rare wood which can be taken only from where the limb branches from the trunk of the tree. Pilaster panels and inclined sounding board are of highly figured Butt Walnut, perfectly matched. The fluted lower pilaster rails add to the magnificent dignity of the design. This cabinet is solidly constructed with heavy ends and base which add to the tone quality. The self-balancing lid support is another feature which makes this design an outstanding cabinet. Height 44 $\frac{3}{4}$ inches; width 27 $\frac{3}{4}$ inches.

\$195.00—Twin Speakers, Shadow Tuning, Tuning Silencer, 9 tubes, 4 Pentodes, Automatic Volume Control, etc. All electric phonograph playing long or short records. Automatic Stop.

\$295.00—Radio-phonograph with Automatic Record Changer.

It Looks Better. It Sounds Better. It IS Better.

PHILCO : PHILADELPHIA : TORONTO : LONDON

Tell them you saw it in RADIO

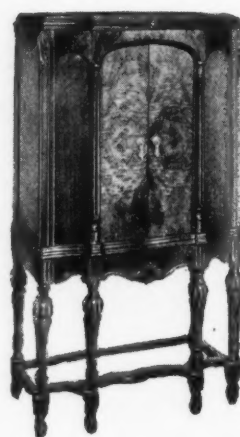
PHILCO—A Musical Instrument of Quality



Model 91-L



Model 22-L



Model 91-D

Philco 91-L

An unique design, unobtrusive but with a rich appearance made possible by the use of expensive woods. Butt Walnut instrument panel and carved pilaster panels, using quartered sliced pin stripe Walnut and Butt Walnut overlay. The instrument panel is highly figured Oriental wood of great natural beauty and beautifully finished. The pilaster panels are specially constructed allowing the use of beautiful woods. The arch and apron again use rich Butt Walnut. The six fluted legs blend perfectly with the carved pilaster panels. Height 39 $\frac{5}{8}$ inches; width 25 $\frac{1}{8}$ inches.

\$89.50—Twin Speakers, Shadow Tuning, Tuning Silencer, 9 Tubes, 4 Pentodes, Automatic Volume Control.

Philco 22-L

A six leg radio-phonograph cabinet with a combination of selected woods matched in perfect harmony. The instrument panel is of imported figured Oriental wood, in beautiful natural color and perfectly matched. The post carvings blend with the woods used in this design. The pilaster panels are quarter sliced, pin stripe, American Black Walnut. This cabinet is solidly constructed and has a self-balancing lid support as used in more expensive designs. Arch and apron are of highly figured Butt Walnut, inlaid with Boxwood and center matched to add to the beauty of design. Height 43 inches; width 25 $\frac{3}{8}$ inches.

\$129.50—Automatic Volume Control, Twin Speakers, etc. All-electric phonograph playing long or short records. Automatic Stop.

Philco 91-D

An artistically designed Highboy with highly figured matched Butt Walnut Doors. The designer has added ornamentation to this cabinet with post carvings, apron carvings and six beautifully fluted legs. The pilaster panels are made with quarter sliced pin stripe American Black Walnut which requires special cutting of veneer at added expense. The doors have drop leaf pulls with ultra-antique finish. Apron and arch again use matched Butt Walnut, highly figured and carefully selected. Height 47 $\frac{3}{4}$ inches; width 26 $\frac{1}{8}$ inches.

\$99.50—9 Tubes, Shadow Tuning, Tuning Silencer, etc.

\$89.50—8 Tubes, for Direct Current.

\$79.95—7 Tubes, 4 Pentodes, Twin Speakers, Automatic Volume Control, etc.

\$85.00—7 tubes for battery operation, space for all batteries provided in cabinet.

Beautiful Cabinets of finest woods — hand rubbed
PHILCO : PHILADELPHIA : TORONTO : LONDON

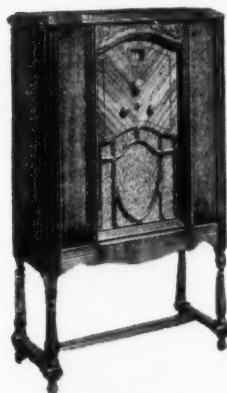
PHILCO—A Musical Instrument of Quality



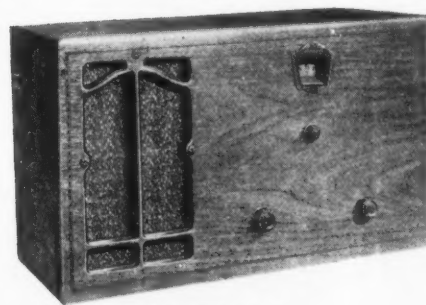
Philco Baby Grand



Model 71-H



Model 71-L



Model 52-C

BABY GRAND

For uniqueness of design and perfect proportions the 52, 71 and 91 Baby Grands cannot be equaled. An arch of true Gothic shape veneered with Quartered Pin Stripe Walnut perfectly matched forming a "V", which adds a dignity true to all Philcos. The instrument panel which is so strikingly beautiful is veneered with Oriental Wood imported from Australia. The Australian woods are now in this country and have been used quite successfully on high grade furniture. Philco engineers were quick to adopt this wood which is so beautiful and so rich in natural color.

91—Height 18 $\frac{1}{8}$ " ; width 16 $\frac{1}{4}$ "

71—Height 18 $\frac{3}{8}$ " ; width 15 $\frac{1}{2}$ "

52—Height 16 $\frac{1}{8}$ " ; width 13 $\frac{3}{4}$ "

71 B—\$46.50—7 Tubes, 3 Pentodes, Automatic Volume Control, Electro Dynamic Speaker.

91 B—\$68.50—9 Tubes, 4 Pentodes, Shadow Tuning, Tuning Silencer, Automatic Volume Control, etc.

\$59.50—7-Tube, Battery Operated.

\$59.50—8-Tube Direct Current with marvelous tone due to new Pentode output.

52 B—\$36.50—Alternating Current, 5-Tube, Pentode Output, Electro Dynamic Speaker, Illuminated Dial, etc.

52-C COMPACT

This is a convenient little cabinet designed to place the most possible radio in the least possible space. It is beautiful enough to take its place on mantel, table or stand, and yet, so compact that it can be placed inside a bookcase if desired. Cabinet work in this little set is comparable with all Philco woodwork. Black Walnut is inlaid with Boxwood and Blackwood. Height 10 $\frac{3}{8}$ inches; width 18 inches.

\$39.50—5-Tube Superheterodyne, Pentode Tube Electro Dynamic Speaker, Black.

71-L

This is a perpetuation in modern form of the long popular Lowboy. Hundreds of thousands of previous models are now being enjoyed in American homes, and this new model will, we expect, be even more popular than its predecessors. The top panel is of American black walnut; the pilaster panel quarter sliced walnut; the instrument panel is American Walnut; the aprons are of Quilted Maple; and the grille is also of American Sliced Walnut. Height 39 $\frac{5}{8}$ " ; width 23 $\frac{1}{2}$ ".

\$59.50—7 Tubes, Balanced Superheterodyne, 3 Pentodes, Automatic Volume Control, Electro Dynamic Speaker.

\$69.50—7-Tube Battery Operated.

71-H

This model is today's development of the long popular Highboy. American Black Walnut is in the top panel; Oriental wood in the Pilaster panels; the instrument panel is of Butt Walnut and so are the aprons. Rich carvings add tastefully to the design, in which both Satinwood and Rosewood inlays are used. Six fluted legs. Height, 42 $\frac{1}{2}$ inches; width 24 $\frac{7}{8}$ inches.

\$69.50—Twin Electro Dynamic Speakers, Automatic Volume Control, 7 Tubes, 4 Pentodes, Tone Control, etc.

Philco has every worth-while improvement

PHILCO : PHILADELPHIA : TORONTO : LONDON

Tell them you saw it in RADIO

the New Patterson ~~ALL-WAVE~~ SUPER-HETERODYNE



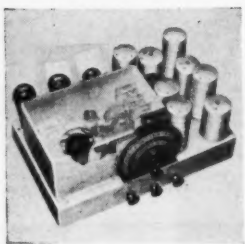
MODEL 91



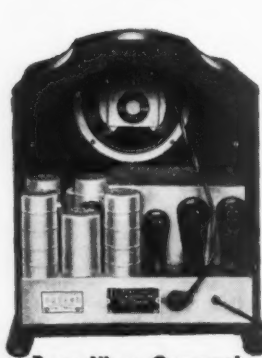
MODEL 92



MODEL 95



MODEL 1032 CHASSIS
Made in two sizes. 10"x15"
and 10 1/2"x17". Parts and
performance identical.



Rear View Compact



MODEL 90 COMPACT
Performance and tone
quality equal to that of
console models.

This is an
ALL-WAVE
YEAR

Patterson
Radio Company

Builders of
QUALITY RADIO
SINCE 1920

THE NEW PATTERSON ALL WAVE SUPERHETERODYNE CHASSIS IS AVAILABLE IN
FOUR DIFFERENT CABINET MODELS. ALL R. C. A. LICENSED.

The Model 90 Compact at \$59.50
The Model 91 Console at \$64.50

The Model 92 Console at \$69.50
and the Deluxe six-legged Model 95 at \$79.50

The Chassis, tubes and speaker is offered separately to be assembled in the dealer's own cabinets or one that the customer has
which is too good to discard. Model 1032 at \$54.50

The Chassis is made in two sizes—10x15 and 10 1/2x17. Both are identical in parts and performance.

The 1932-1933 line of U. S. Radios in Apex and Gloritone models covers a complete range, from a midget style in the popular new rectangular shape, which affords a new quality of reception in such small sets, at \$29.95, up to the Deluxe model embodying every important advance in radio and



a new distinction in cabinet design.

The models shown in the accompanying photographs, with descriptions, are typical of the line which in its entirety includes four handsome Console models and four of the smaller cabinet type, including a combination long and short wave set.



APEX - GLORITONE

U. S. Radio—Gloritone Model 25A

The handsome cabinet is of solid walnut in the new and popular rectangular design.

Tube equipment consists of two No. 57, one No. 58, one No. 247 and one No. 280.

The cabinet is 9½ inches high, 17 inches wide and 8 inches deep.

U. S. Radio—Gloritone Model 9B

Quiet, Automatic Volume Control is included as standard equipment. This new development which suppresses static and interference between stations is considered the greatest single development in radio in recent times. "Triple Grid" tubes give approximately five times the volume previously possible. Class B amplification in its very newest development affords a marked improvement in reception.

Tone controls and other equipment of high grade radios are all included. A newly developed four-indicator illuminated dial gives visibly the exact setting of all controls. Fine eight-inch dynamic speaker affords a faithful quality of tone.

The cabinet is a product of one of the country's leading furniture designers, built of beautifully figured walnut with burl maple overlays. The handsomely designed speaker grille is enhanced by a background of gold cloth.

Tube equipment consists of two No. 57, two No. 58, one No. 56, three No. 46, one No. 280.

U. S. Radio—Apex Model 12B

Super-Quiet Automatic Volume Control absolutely cuts out all noise between stations and maintains reception always above the static level. The pure, clear tone, of matchless beauty, is strikingly faithful to the original voice and instruments.

Class B amplification with new Triple Grid tubes gives approximately five times the volume previously possible, eliminates all possibility of overloading and improves reception at normal volume.

Matched dual speakers, one 10 inches and the other 8 inches in diameter, afford faithful reproduction over the full range of the tonal spectrum.

The tone controls and other equipment of a high grade radio are all included. A newly developed, four-indicator illuminated dial gives visibly the exact setting of all controls.

Note the distinctive curved ends of this cabinet which is exquisitely wrought of the finest woods, including walnut with satinwood overlays and Oriental walnut veneers.

The tube equipment includes three No. 58, two No. 57, three No. 56, three No. 46 and one No. 82.

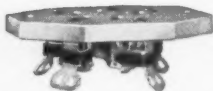


The New COMET "PRO"

**Superheterodyne—Custom-Built by
HAMMARLUND for Professional Operators**

Gives sensational distance reception on waves between 14 and 200 meters. Ship and police operators, airport and broadcasting engineers, and expert amateurs say it is "the most efficient short-wave receiver ever designed."

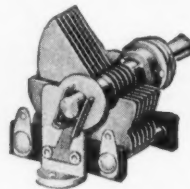
Eight tubes. Low noise level. Band-spread tuning. Long-wave oscillator simplifies location of weak signals and gives clear C.W. code. Phone and speaker connections—also connection for external amplifier, supplied to match if desired.



ISOLANTITE SOCKETS. Electrical efficiency not affected by temperature or humidity. Top and sides glazed. Perfect contact by reinforced side-gripping rustproof springs; 4, 5, and 6 prongs with standard mounting centers. A wonderful low-loss socket for short-wave work.



SHORT - WAVE TUNING CONDENSER. High capacity; wide range. Soldered brass plates. Rugged frame. Double four-point wiping contact. Isolantite insulation. Single and dual models; 20 to 325 mmf. per section.



ISOLANTITE SHORT-WAVE COIL FORMS. Non-slipping winding surface $2\frac{1}{2}$ " long by $1\frac{1}{2}$ " diameter; 4, 5 and 6 prongs for standard or Hammarlund sockets.

Write for
Descriptive
Folders

For Better Radio
Hammarlund
PRECISION
PRODUCTS

Address
Department
PR-6

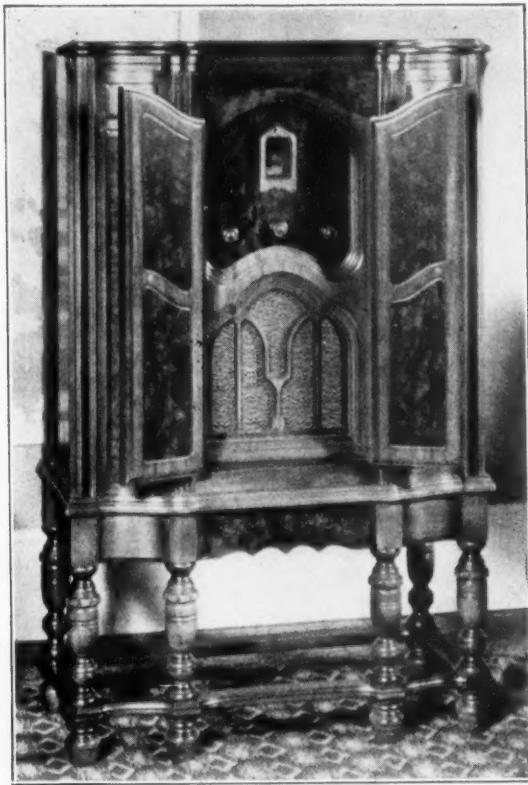
HAMMARLUND MFG. CO., 424-438 W. 33rd St., New York

Pacific Coast Representatives:

HENDER-SELTZER CO., 711 East 14th St., Los Angeles, Cal.; 1264 Folsom St., San Francisco, Cal.

R. C. A. VICTOR

Model R-78 Bi-Acoustic



R. C. A. VICTOR ANNOUNCES BI-ACOUSTIC RADIO

A REMARKABLE new receiver, incorporating radical advances in circuit design that are hailed as the most important since the advent of socket power operated receivers, is announced by the RCA Victor Company, Inc.

The new receiver which will be known as the RCA Victor R-78 embodies an entirely new circuit, utilizing 12 entirely new Radiotrons, and provides an extraordinary range of frequency response and volume. Because the unique features of the new circuits have resulted in many major acoustic improvements, the new receiver has been termed the BI-ACOUSTIC RADIO. The new BI-ACOUSTIC circuit provides twice the power and twice the tone range of ordinary receivers, hence the use of the prefix BI. Tone equalization, automatic tone compensation, dual automatic volume control, increased musical range and the application for the first time of the new class "B" audio amplification to a socket operated receiver are all important factors in the new BI-ACOUSTIC radio.

Among the features of the new BI-ACOUSTIC radio which stand out as major developments are:

1. The engineers of "Radio Headquarters" have developed the remarkable new principle of class "B" audio amplification, which makes it possible, for the first time, to provide within the confines of a comparatively small radio cabinet, and at economical cost, a system of superior amplification that has an output of over 10 watts as compared to the output of from 3 to 4 watts of ordinary receivers. This means that a reserve of power is present in the receiver which gives matchless

performance without distortion over practically the entire volume range. Since sound broadcasting, particularly music, requires a great variation in volume levels, certain peaks of volume require, momentarily, five, six, or up to ten watts of output, instead of the $\frac{1}{2}$ to 4 watts provided by the ordinary receiver.

2. Automatic Tone Compensation, by means of which the reproduction of high and low frequencies are automatically balanced at every level of volume. Ordinarily, the limitations inherent in the human ear cut out high and low tones when the volume is turned down below what is considered normal room volume. With the new automatic tone compensation of the BI-ACOUSTIC circuit compensation is made for balancing the lows and the highs at all volume levels.

3. A new system of cabinet tone stabilizers which eliminates the "boomy bass" and the shrill "highs" to preserve the crystal clearness of the original tones. Special tone chambers with pipe openings of correct, scientific size establish the proper acoustical balance of the entire cabinet.

4. Dual Automatic Volume Control which is instantaneous in its operation and holds the volume at an absolute level over the entire operating range. More important, it effectively suppresses noises between stations. This improved volume control makes possible a material tone improvement, particularly at low volume levels.

5. Extended Tone Range which makes possible the reproduction of an additional octave at each end of the tonal scale. Many of the receivers now on the market

have a frequency range of from 60 to 3500 cycles. The new BI-ACOUSTIC receiver has a range of frequency response of from 35 to 5200 cycles, providing a measurable and quickly discernable improvement in tone quality.

6. The new BI-ACOUSTIC R-78 was especially designed to utilize the potentialities of the new Radiotrons, including the new Mercury Vapor Rectifier, the new Dual Grid Output Radiotrons, a new R. F. Amplifier Pentode, and the new high efficiency Triodes.

7. A new loudspeaker development provides for the greater output delivered to it at peak loads by the new circuit. The old speakers would have been inadequate to handle without distortion the power peaks or the increase in the frequency range which the new BI-ACOUSTIC radio amplification provides.

8. An unusually high quality cabinet, of quilted maple and butt walnut which provides an acoustically correct baffle area that assists in the creation of fine tone quality. Matched and quartered veneers on the front of the cabinet provide an interesting variety of pattern which gives this receiver some of the advantages of a custom built instrument.

The new RCA Victor BI-ACOUSTIC R-78 will retail at a suggested list price of \$139.50. Its cabinet dimensions are: Height, 43"; width, 28 $\frac{1}{4}$ "; depth, 13 $\frac{1}{8}$ ". It weighs approximately 168 pounds, and employs the following new Radiotrons: 4 RCA-58 Pentodes, 5 RCA-56 high efficiency Triodes, 2 RCA-46 Dual Grid Class "B" amplifiers, and 1 RCA-82 Mercury Vapor Rectifier.



Combinaire No. 10

A New Creation by Capehart

AN UNINTERRUPTED program of your own selection in your own home. A few minutes or a few hours. "Music you want when you want it." Combinaire brings you this at a price never before possible. The new Combinaire combines a Capehart-designed Ten-Tube Superheterodyne Radio with the Capehart Automatic Record Changer.

Broadcast and Short Wave Bands.
12" Dynamic Speaker.
Automatic Volume Control.

Push-Pull Pentodes.
Vernier Tuning.
And—

The Capehart 10-12C Automatic Record Changer that gives you your choice of all electrical recording in clarity and purity unequalled.

Plays either ten-inch or twelve-inch records, of any make, both the standard 78 R.P.M. and the 33 $\frac{1}{3}$ R.P.M. "Program Transcription" types.

A few valuable distributor franchises still available.

Write or wire at once.

Ind.

The CAPEHART CORPORATION - Fort Wayne, Ind.



Combinaire No. 11

A New Creation by Capehart

EXCLUSIVE Capehart cabinets by a famous designer, soft finish two-tone burl walnut. Modernistic motif. Artistic creations worthy to adorn any home. Special features:

New doors make record changer easily accessible for loading.

Interior finished in light, cheerful tones.

Not necessary to remove vases or statuary and raise a lid.

Legs not doweled. Unit construction with base.

Height 55 inches; Width 26 inches; Depth 17 $\frac{3}{4}$ inches.

Cabinets as superior to the ordinary as the fine instruments they encase. See them at your first opportunity. And enjoy the wide range of programs of your own choosing!

A few valuable distributor franchises still available.

Write or wire at once.

Tell them you saw it in RADIO

E. T. Cunningham's Trade Show Message

Mr. Elmer T. Cunningham, President of the R. C. A. Radiotron Co., Inc., announces that radio is now truly a musical instrument because of the following new innovations in vacuum tube design:

- (1) New super-triode amplification.
- (2) Mercury vapor rectification.
- (3) Triple grid amplification with and without super-control.
- (4) Dual grid power output.
- (5) Greatly reduced cathode-heater current consumption.
- (6) Dome bulbs.

The new tubes are designated as types 56, 57, 58, 46 and 82.

• • •

Radio sets with the greatest advance in receiver design since the introduction of the all-electric set in 1927 are being announced by manufacturers this month.

• • •

"In seventeen years in the radio business I have never seen greater advances in tone quality, selectivity, sensitivity, and general overall performance than offered in 1932 radio sets using these new tube designs, dome bulbs and improved uniformity. Every radio enthusiast, every prospective purchaser of a radio, should have a home demonstration of the forthcoming 1932 radio sets with the new two-and-one-half-volt tubes before purchasing," Mr. Cunningham says.

PINES "B"-BATTERY ELIMINATOR

Overcomes the
Greatest Obstacle
to Retail
Auto Radio Sales
and
brings you
a double profit!



Measures $5\frac{3}{4}$ x 8 inches, $6\frac{1}{4}$ inches deep.
Weight 15 pounds.

YOU sell auto radios. But you want to sell more of them. Here is a way that is proving successful.

You know that many auto radio sales are lost because of the unsatisfactory operation of the "B" Batteries. Results show that the new PINES "B" Battery ELIMINATOR now overcomes this obstacle.

What it Does

PINES "B" Battery ELIMINATOR consists of a very efficient motor in combination with a rotary transformer. It receives its current direct from the regular "A" battery, requiring less current than that used by a single headlight. The result is a constant, steady voltage that improves the tone quality of the radio and at the same time makes possible maximum distance and selectivity. In addition, it makes auto radios more economical because the original cost is now the last.

Made of the highest quality materials, PINES "B" Battery ELIMINATOR will give years of service under

all conditions. Water, slush or extremes of temperatures do not in any way affect its operation or efficiency. It is so simple and rugged that there is nothing to get out of order. Greasing, oiling or adjustments are unnecessary. The PINES "B" Battery ELIMINATOR requires only about one-third the space of the regular "B" batteries. It can be very easily installed because it bolts directly to any convenient place under the floor of the car. Requires no cutting.

A Double Profit for You

"It takes only one sale to start the profits rolling," say dealers who now handle the PINES "B" Battery ELIMINATOR. Because the first sale means a satisfied customer who gladly spreads the good news to his friends. The result is quick, sure profits both on radios already installed and with new radios, too.

Don't delay. Write for further information and dealer prices today.

Recommended By Leading Radio Manufacturers

PINES WINTERFRONT COMPANY

DEPT. A, 1153 NORTH CICERO AVENUE, CHICAGO, ILLINOIS

Tell them you saw it in RADIO

PARAMOUNT



The World at Your Finger Tips

Thrill by hearing Foreign Countries, Airplane Messages, Police Calls, Ship-to-Shore Telephone, Amateur Operators, Wireless Stations, Etc.

FEATURES PLUS

11 Tube Super-Heterodyne. Tunes from 15 to 600 Meters. Single Dial Control. No Plug-In Coils. 4 Gang, 4 Point Automatic-wave Changing Switch. 4 Intermediate Transformers. No 200 to 600 Meter Harmonics on Short Wave Bands. Push-Pull Pentode Tubes. Automatic Volume Control. Ball bearing Condensers. Full range Tone Control. 2 Stages Audio Amplification. First and Second Detector. Self-healing Filter Condensers. Illuminated Vernier Geared Dial. Full sized Dynamic Speaker. All Steel Chassis. No Two Spot Tuning.

Where on Earth have you ever seen a radio with so many features?

\$39⁹⁵

Net to Dealers,
Complete With
Arcturus Tubes

RETAIL PRICE - - - - \$79.50
Also Console Models at \$15.00 extra

Paramount's Engineering Genius

Paramount's Engineering Genius again leads, giving you an all wave Super-Heterodyne with but a single Dial to tune. Short wave stations can be tuned in as easily as the regular broadcasting stations and on the same Dial. Not a radio with a short wave converter attached but a single set made to operate on either long or short waves—One Dial—One Chassis.



NEW! *Marvel of the Radio Age*
AUTOMATIC "CLOKTROLA"
Turn Radio On and Off

Automatically
Amazing . . . Almost Human

Automatically turns radio on and off. You may set your entire day's program early in the morning, for instance: Setting-up exercises, 6:00 A.M. 'til 6:20 A.M.; Cooking lessons, 10:00 A.M. 'til 10:40; Noon program, 12:00 'til 1:00 P.M.; something else at 3:00 P.M. and so on around the clock. Let it play you to sleep and awaken you in the morning. All this combined with our 7-tube Super-Heterodyne. Also in console models at \$15.00 extra.

\$37⁹⁵

Net to Dealers.
Complete with
Arcturus Tubes.

RETAIL PRICE - \$69.50

This is our 3-Tube TRF

This is our 3-tube TRF set that defies PRICE competition. Guaranteed by us to be as good or better than any near its price, it has Dynamic speaker, Pentode tube, etc.

Complete **\$7⁹⁵**
with Arcturus Tubes



Paramount's 5 Tube TRF Model

THIS is the PARAMOUNT model that has been repeat-order-getter since it was first released to the trade a short time ago. It is a little aristocrat and stands up well among sets selling at twice this price.



\$11⁹⁵

Net to Dealers Complete with Arcturus Tubes

OUR TERMS: All prices quoted are net cash, we require a deposit of at least 25% on C.O.D. shipments. Send Cashier's check or Postal Money Order to assure immediate shipment.

Our Cable Address: is L. A. R. A. D., Western Union. Foreign orders must contain full remittance plus transportation.

Member of
Los Angeles
Chamber of Commerce

LOS ANGELES RA
3681 So. San P
Los Angeles

— LEADS AGAIN —

With the finest **Automobile Radio** ever produced!

Far Ahead of Anything on the Market A 7-TUBE AUTO RADIO Using All Latest Improvements

1st—The Wunderlich Detector Tube

The Wunderlich tube gives full wave grid detection with a minimization of overloading, full automatic volume control plus a stage of audio frequency amplification.

It provides the essential self-governor or floating control of tone and quality. All signals, weak or strong, are detected and maintained with equal fidelity.

Tone is not sacrificed with volume. It is claimed that this tube has four times the detector power output of the triode tubes. It practically eliminates detector distortion and overloading.

In tests it is proven that the superior performance of a seven-tube set employing the Wunderlich tube could not be duplicated even in sets using many more tubes. Also it is entirely non-microphonic.

2nd—Push-Pull CA Power Pentode Tubes

These tubes give twice the output power of tubes formerly used in car radios.

3rd—No. 39 Pentode Tubes Used in All R-F Stages

These powerful pentode tubes, working in conjunction with a four-gang condenser, supply a very high gain which accounts for the remarkable distance which can be received on a very short aerial.

\$ 39⁹⁵

NET TO DEALERS

Complete with batteries, suppressors, remote control, etc. Retail price, \$79.50. If wanted for all-electric operation add \$20.00.

LOS ANGELES RADIO MFG. CO.
581 So. San Pedro Street
Los Angeles, Calif.

Manufacturers of
Quality Radios
Since 1925

**GUARANTEED TO
OUT-DEMONSTRATE ANY AUTO
RADIO ON THE MARKET TODAY**

Tell them you saw it in RADIO

News and Financial Reports

\$99.00 Refrigeration Here to Stay

A NEW model electric refrigerator, retailing at \$99.50, is announced by the Freeze King Corporation, with production already started.

The new model is all steel, is insulated with Dry Zero and has a capacity of 5.30 cubic feet. The freezing compartment contains three standard trays holding six pounds of ice. It has nine points of cold control, a defrosting switch and an overloading relay. The evaporator is of the flooded type with a reciprocating compressor and aluminum alloy piston.

"We know that an electric refrigerator at this price will meet with the approval of the public," Arthur Bohnen, president of the company, declared. "For years we have been making quality boxes that do not come within reach of the masses. The public wants electric refrigeration at minimum cost and maximum quality."

"To make an electric refrigerator of this type, our engineers were confronted with a real problem. Production must be in volume, similar to the automobile company, yet so flexible it can be increased in a few hours."

"We guarantee it for a minimum of three years," Mr. Bohnen concluded.

Annual Report of the Arcturus Radio Tube Company

A NNUAL report of Arcturus Radio Tube Company of Newark, N. J., for 1931 shows a loss of \$266,103.11 after all charges and adjustments, as compared with a loss of \$1,368,898.14 for 1930. Net operating profit before depreciation totalled \$63,394.81 in 1931 as compared with a net operating loss of \$791,891.79 in 1930; the improvement being due to the manufacture and sale of nearly twice as many radio tubes in 1931 as in the previous twelve months. Balance sheet at the close of the year shows current assets exceeding current liabilities in ratio of more than 10 to 1, with cash alone considerably exceeding all current and fixed obligations.

"Omitting provision for depreciation and amortization of book values," stated President Chester H. Braselton, "the 1931 operations were conducted at a profit. The company practically doubled the number of tubes manufactured and sold during 1931, as compared with 1930, and came within 20 per cent of the quantity sold in 1929, the best year in its experience. Unit prices on radio tubes, however, declined nearly 50 per cent. During the year, Arcturus had no surplus inventories and manufactured only to meet current demands. The increase in sales not only strengthens the company's position, but presages a greater replacement business in 1932, because a large proportion of

Arcturus tubes were sold to set manufacturers for initial equipment in new sets.

"Finished inventories were re-priced at the end of the year to conform with lower costs effected in manufacturing. Throughout the year cash was consistently more than sufficient to liquidate all liabilities. No money was borrowed."

Helps for Dealers and Service Men

Technical data of elaborate nature has been compiled by the Arcturus Radio Tube Co. showing characteristics and operating conditions as well as electrical requirements, mechanical requirements and general information with curves and statistics on the new types of Arcturus tubes. Copies of these technical data pamphlets will be sent for the asking, without cost, by writing Arcturus Radio Tube Co., 260 Sherman street, Newark, New Jersey.

The Capehart Report

"S EVENTY PER CENT net increase in business from March over February, 1932—the largest business of the last nine months with the exception of December and its holiday business."

This is the sensational report of The Capehart Corporation, Fort Wayne, Ind., pioneer manufacturers of automatic record changing devices and radio-phonograph combinations. Steadily growing foreign sales figure in this exceptional showing.

In these days any increase of 70% in business is something to talk about and in this instance it is particularly impressive in view of the fact that the Capehart products are sold to the most discriminating market of all countries. Considering that the Capehart products are decidedly in the upper price bracket this renewed buying power of the quality market is good news indeed.

The Capehart factory has been in continuous operation from its inception in 1928. The opening months of 1932 find its markets increasing both at home and abroad. Capehart combinations are now being shipped to nearly every country in the world in which there is an appreciation of fine music.

"It is a common mistake," says F. W. Gigax, general manager of The Capehart Corporation, "to consider the quality market only in connection with large incomes. To be sure, most customers are to be found among those of easy circumstances, but these customers after all are only a part of the market."

"A very large and very important section is made up of musicians and music lovers of relatively moderate incomes who so prize the utmost that radio and phonographic reproducing science can give that

they will possess these combinations even at the sacrifice of other things. To them the music of great artists in its glorious reality is of more value than the ownership of the finest automobile or some similar indulgence. It is for such discriminating and appreciating audiences as these," continued Mr. Gigax, "that our laboratories have developed radio reception and reproduction of electrical transcription to the point that the listener may enjoy 'the artists in person' quality of music."

Recently wide publicity was given to seven sales of CAPEHART combinations and equipment totalling \$7,267.00 by a Connecticut dealer during the last ninety days of 1931, an average of \$1,038.00 per sale. Needless to say, the dealer's profit on these instruments will be considerably increased by his additional sales of records, etc.

United Effects Reorganization

J OHN T. BEATTY, president of the United Air Cleaner Corporation, manufacturers of Sentinel Radio Receivers, and Sam Howard have been appointed co-receivers of this firm, acting under jurisdiction of the U. S. Court. This action was entirely voluntary on the part of officers of the company and was arranged with the co-operation of three friendly creditors. The company under the new management has already been provided with additional working capital.

This action was taken in order to put through several necessary re-adjustments in the business, which will place the company, it is believed, in a position to better conserve its assets through a trying period and to serve its customers with greater facility.

In a trying period, such as the present, when all businesses have found it difficult to steer through troubled waters without serious impairment of working capital, due to the necessary leniency carrying the accounts of customers and at the same time trying to properly care for their own obligations, it was deemed advisable by Mr. Beatty to take the above action.

The personnel and all of the physical properties of United remain exactly as before and Mr. Beatty has stated that business will go on as usual and, in fact, is going on without interruption of any kind.

All of the customers of the company were notified of the action, which was taken merely as a precaution to insure uninterrupted progress and have pledged their cooperation and support.

Mr. Beatty issued a statement in which he declared that the company is in sound condition with plentiful assets, but due to the slow condition of collections and business generally, it was thought best to temporarily operate under receivership.

David Sarnoff Analyzes R. C. A.'S Report

ALTHOUGH the entire industry has been going through a trying period, due to generally depressed business conditions, I can make the hopeful statement that I do not believe the situation has become any more aggravated in recent months. My view is that conditions through which we have passed have emphasized the inherent soundness, rather than weakness of radio. We have been swimming upstream, but nevertheless the last year has been marked by a great deal of progress. Many industries much longer established than radio have suffered even more acutely from the curtailed purchasing power of the public and from the inability to carry out any enlarged programs. We have effected a great many economies in the cost of operations and have continuously improved the quality of merchandise and service being offered to the public.

I am able to announce at this time the results of our operations for the first quarter of the present year. The figures which are being released for publication following this meeting show a gross income for the three months of \$20,585,222.54 and a net profit after all charges of \$503,223.72. While the amount of the profit is modest, it is in excess of the requirements for the "A" Preferred dividend declared by the Board of Directors for the first quarter of 1932, and shows a great improvement over the final quarter of 1931. During the final quarter of 1931 we were in the red while during the first quarter of 1932 we are in the black.

The prospect of radio for the remainder of the year is dependent largely upon the general business trend. About this one must hesitate before making any prediction. Nevertheless, I believe that the constructive efforts being exerted in many quarters will begin to bear fruit during the current year, so that, even though industry may not for some time regain its normal levels, the readjustment to new conditions will have advanced sufficiently to justify the expectation of an acceleration in business.

In the manufacture of radio receiving equipment, there are some factors which do not apply to business generally. Radio broadcasting has become such an established medium for information that the position of the radio receiver has been altered. It is not a novelty, as it was ten years ago, nor is it confined to supplying amusement and light entertainment, although its place in the home entertainment field is unchallenged. It is now generally recognized that radio is a household and business necessity. In a period when the possession of general information is becoming more and more a common requirement, when the expressions of leading thinkers on international and domestic questions are of first importance to the small business and the large, and when the citizen is more than ever, economically as well as politically, concerned with the affairs of government — municipal, state and national — an instrumentality so important to public information and education rises to a higher role. Radio is an essential for the citizen who would be well informed.

During the present year, with a presidential campaign in progress which promises to have unusual interest, radio will have added significance in national affairs. I feel it is not too much to say that to know the presidential candidates, to feel their personalities, and to obtain the full information needed for the exercise of the franchise, there will be an increasing reliance by the public this year on radio. Because of this great service offered by broadcasting, we hope for an improvement in the volume of sales during the balance of the year. Much has been added to radio that should encourage owners to replace old sets. At no time in the history of the industry has the public been offered values comparable with those prevailing today. The industry has labored most energetically to improve its merchandise and thereby stimulate buying.

This Plan Will Make Money For You

A beautiful 250 page book of de luxe art portraits of leading radio artists . . . with a brief biographical sketch of each. Bound in heavy fabrikoid with gold lettering. Size 7x10 inches. Nothing of this nature has ever before been attempted in the radio field. This "book of the stars" is your ideal means for bringing customers into your store . . . for use as a gift with the sale of a set or accessory . . . for retail sale to your customers who have long wanted just such a book . . . for use as prizes and premiums. The list price of the book is \$2.50. Your price is \$1.50 in lots of one; \$1.25 per copy in lots of six or more. Get ONE copy. Convince yourself of its merit. Watch your customers snap it up. Ready for delivery on June 15th. But to insure early receipt of copies your order should be sent today. The supply is limited. For sale by "RADIO", Pacific Building, San Francisco, Calif.

A Brand New SHORT WAVE LOG

The Simplest, Most Fool-
Proof, Complete Log
Ever Designed.

HERE is a new type of SHORT-WAVE LOG that absolutely beats any log you ever saw! It is so simple any woman can understand it and yet complete in every detail. Short-wave stations of the world are clearly arranged, giving both megacycles and kilocycles. A complete, legible map of the world tells you where every station is, and the time divisions of the world. All stations listed have been **actually logged** and complete information about their time on the air, location, quality of reception, etc., is included.

The new SHORT-WAVE LOG has an exclusively patented feature in a movable clock-dial, giving accurate time at any point in the world. In addition, Don Wallace, nationally-known short-wave expert, has written an introduction that explains in clear detail exactly how to install and operate a short-wave set to get the best reception.

Designed and edited by

Don Wallace

Winner of Hoover Prize for
the best amateur short wave
station in America.

LIST PRICE 25c

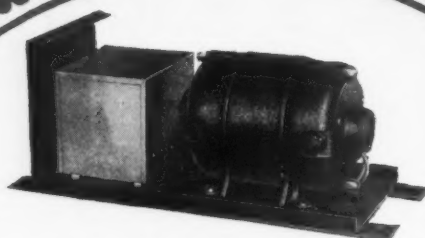
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(If imprint or advertisement is desired on logs, please send copy with order and include \$2.00 for imprinting, regardless of quantity.)

DON C. WALLACE

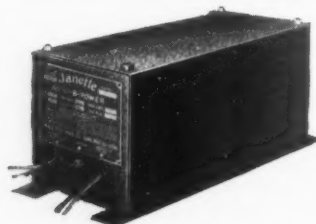
4214 Country Club Drive
Long Beach California

Tell them you saw it in RADIO



Upper illustration shows open view of
JANETTE "AUTO-B-POWER"

Lower illustration shows enclosed view of
JANETTE "AUTO-B-POWER"



Janette "Auto-B-Power"

"B" Eliminator for Battery Sets in Automobiles, Airplanes,
Yachts and Farm Homes

DATA

Volts Input	Volts Output	Battery Drain in Amperes	
		At 25 M.A.	At 40 M.A.
6	135	2.3	2.8
6	180	2.5	3.0
12	135	1.15	1.4
12	180	1.25	1.5
32	135	.5	.6
32	180	.6	.7

JANETTE MANUFACTURING COMPANY

557 WEST MONROE STREET

CHICAGO, ILLINOIS

The Janette "Auto-B-Power" is a dynamotor type of eliminator which transforms 6, 12 or 32 volts D.C. into 135 or 180 volts D.C. The unit consists of a dynamically-balanced ball bearing dynamotor connected to a filtering circuit and furnished complete with a voltage divider and tap. The entire machine is encased in a substantial dust-proof steel box fitted with lugs suitable for bolting to the floor boards of an automobile. Weighs 20 lbs. Measures 12x6x5½ inches.

JANETTE Sales Offices are maintained in the following cities:

Singer Bldg.
149 Broadway
New York

Real Estate
Trust Bldg.
Philadelphia

LOMBARD SMITH CO.
324N. San Pedro St.
Los Angeles

HARRISON SALES CO.
314 Ninth Ave., N.
Seattle

Radio Show Announcement by Hygrade-Sylvania



New Hygrade-Sylvania Products

HYGRADE SYLVANIA CORPORATION introduces a new group of 6.3 volt tubes, developed by Sylvania engineers, for use in all types of receivers *other than dry battery receivers*.

The new all-purpose 6.3 volt tubes feature an exclusive triple-fold heater filament made from specially coated wire, which cuts heating time to approximately half that of the average quick heater tube. With it the entire set is in operation within $8\frac{1}{2}$ minutes after the switch is snapped.

In addition to quick heating the 6.3 group offers the advantages of practically humpfree reception, lower power consumption and a general improvement in performance.

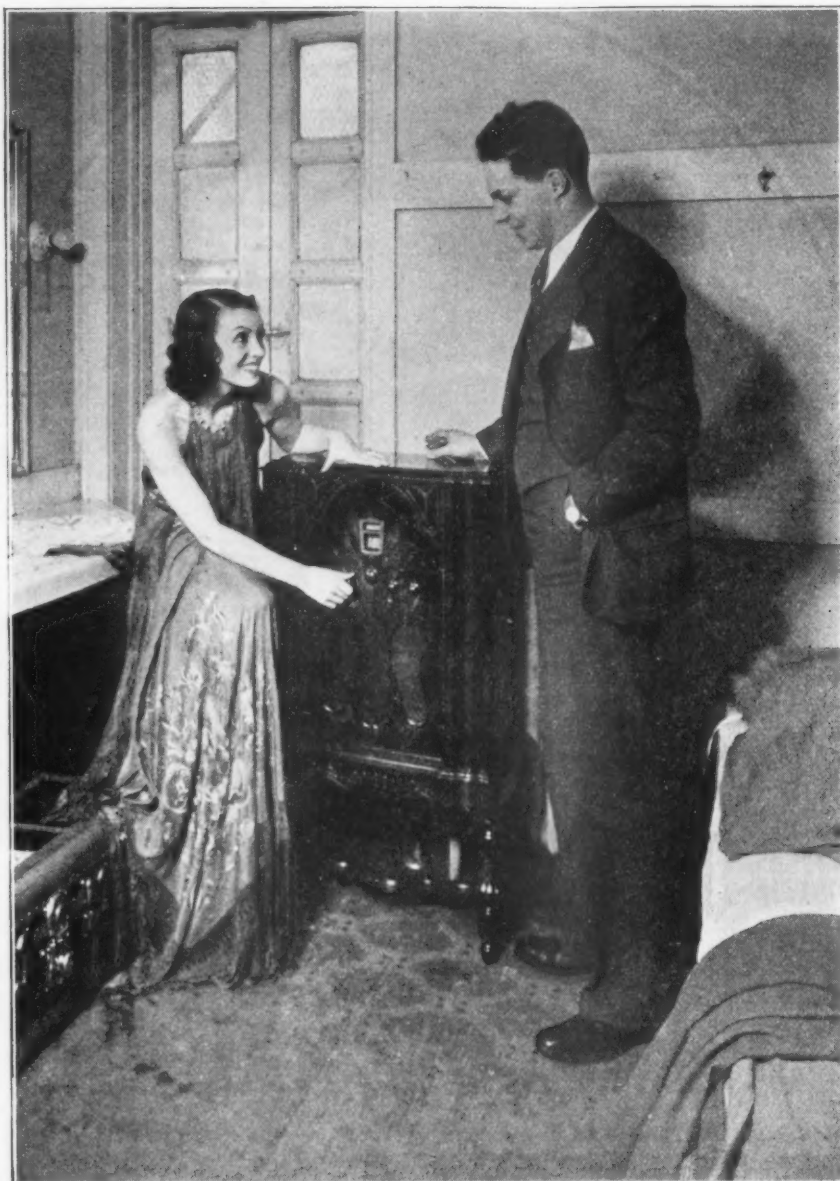
The new tubes include an improved 36, for use as an R. F. and I. F. amplifier and detector; 37, redesigned with the triple-fold filament and now interchangeable for automobile and A. C. service; 39, an R. F. pentode for automobile service; 44, similar to 39, but with several changes, making it better adapted for A. C. use; 38, a cathode

type power pentode designed for use in automobile service, with increased power output which makes it available for superheterodyne circuits; 41, an improved cathode type pentode, giving high efficiency in automobile radio; 42, a heater type output pentode, superseding 247, with greater uniformity of characteristics and increased power output; 69, an entirely new type Detector, designed to give improved quality and perfected A V C action.

The newly introduced group of 2.5 volt Sylvania tubes, 56, 57, 58, 46, and the new mercury vapor full-wave rectifier, type 82, will also be featured at the RMA Show.

The new Sylvania Counter and Portable Analyzers, first presented to the trade in April, 1932, are already proving their value to dealers. They will be on view at the Hygrade Sylvania Booth, and in six special demonstration rooms on the 18th floor of the Stevens Hotel during the Show.

Tell them you saw it in RADIO



We don't believe it

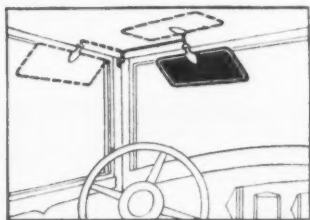
This is a picture snapped while McMurdo Silver was supposed to be explaining how to get police calls on the new Silver-Marshall R-26 radio to the movie star, Conchita Montenergo. Do you believe this story?

New!



A PERFECT AUTO RADIO AERIAL... Combined with Sun Visor

HERE'S a new profit-maker! Motor car owners by the thousands are having auto radios installed. They'll prefer Vizor-Tenas for aerials because they provide all the efficiency of the "auto roof" type aerial—retail at half the price—do not require tearing up car's top for installation. And have additional feature of being an adjustable sun visor that protects from the side as well as front.



Showing Vizor-Tena protecting driver's eyes from glare in front. Ball and socket hinge joint allows any adjustment up, down and to the side.

Newest Accessory Profit Maker

Demand will be great for this double-duty accessory—and profits BIG! Be the first to have Vizor-Tenas ready for the trade! Mail coupon for Sample pair today!

VIZOR-TENA CO. Balcony Building,
Kansas City, Mo.

VIZOR-TENA

*is the Perfect
Auto Radio Aerial*

Vizor-Tenas provide the same clear, undistorted reception of an "auto roof" type aerial—but a pair retails at half the cost. They give far better reception than "running board" and other non-"roof type" aerials—are more easily installed—and sell for less.

Mail Coupon or Wire
for Sample and
Details!

RETAILS AT

\$5.50 per
pr.

VIZOR-TENA CO.

Balcony Bldg., Dept. D
Kansas City, Mo.

VIZOR-TENA COMPANY,
Dept. D, Balcony Building, Kansas City, Missouri

Gentlemen: Send at once Sample pair of Vizor-Tenas at \$5.50 list—less liberal dealer discount.

Name

Address City State

Jobber's Name City State

Tell them you saw it in RADIO



Stewart-Warner
Table Model, 6 Tubes



Stewart-Warner
DeLuxe Console, \$57

Stewart-Warner Features "Magic Dial" in New Line

AMONG the dominant features of the new Radio Line announced by Stewart-Warner Corporation, Chicago, are the two-speed Magic Dial, Automatic Volume Control, Automatic Tone Control and Local-Long Distance Switch.

Of these improvements, by far the most spectacular is the two two-speed Magic Dial, available in all models of the new 11-tube, duo-superheterodyne World Wide Radios. This, according to the manufacturer, offers the "something new" that will stimulate radio sales. In appearance this two-speed Magic Dial looks like the conventional dial that appears on standard radios except that in addition to the regular controls, a lever switch is placed below the tuning knob. This switch, which is really a master wave band selector, is the control agent of the Magic Dial. The Magic Dial is really four dials in one, although only one dial is visible at a time. At a flip of the switch, one dial disappears and another takes its place. The exposed dial is then tuned in the regular manner.

This unique Magic Dial was created in the interests of easier tuning of a set which, according to its makers, has eight times the sensitivity of previ-

ous models. One dial shows the standard wave band calibrated in kilocycles, while each of the other dials is devoted to a different range of the short wave bands, calibrated in meters.

Automatic Volume Control

AUTOMATIC volume control is featured in the whole Stewart-Warner Line. In the 11-tube sets, a highly perfected automatic volume control minimizes fading and maintains any desired volume at a constant level, irrespective of station power.

The duo-superheterodyne circuit employs four #56 tubes, one #57, three #58, two PZ Pentodes and one #80.

The automatic volume control in the 6-tube sets is obtained through the flowing or balanced control of the new Wunderlich tube, which combines in itself the function of the second detector tube and automatic tone control. Five other tubes are used in this set. They are, #56, #57, #58, #PZH Pentode and #80. This circuit was especially designed for the tubes used, which accounts for the remarkable results obtained.

Automatic Tone Control

The automatic tone control featured in all sets is a compensating device which accentuates or minimizes the relative tone values of the broadcast to the sensitivity limitations of the human ear at various volumes. The low notes of a broadcast, which are lost when volume is lowered in the usual way, are retained through the compensating action of this device. In other words, the reception is ear-tuned to sound natural at any volume.

The Local-Distance Switch

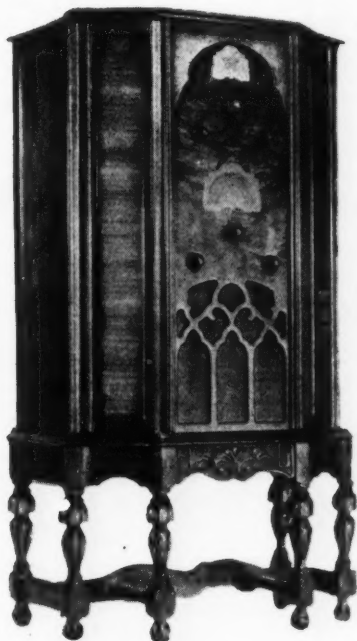
The local-distance switch is another outstanding feature of all 11-tube sets. This switch enables the operator to increase or decrease sensitivity for local or distant broadcasts. It eliminates interference on local stations and makes available maximum sensitivity on distant stations.

Twelve Models in the Complete Line

The complete Stewart-Warner Line consists of the 11-tube All Wave Radios and the 6-tube sets available with and without built-in short wave equipment. There is also a separate short wave



Stewart-Warner
Model 50 Console



Stewart-Warner
DeLuxe Console, 6 Tubes

Stewart-Warner Features "Magic Dial" in New Line

converter. This, together with an 8-tube battery set, completes the line of twelve models.

11-Tube Duo-Superheterodyne Magic Dial Line

There are three console models in this line, consisting of an 18th Century Console, 18th Century De Luxe Console and Radio Phonograph Combination.

#50 Console—New 6-legged cabinet designed in early 18th Century style. Front and curved pilasters of 5-ply matched butt walnut veneer; top and sides of walnut veneer. Genuine wood carving decorations. Important features: Two-speed Magic Dial, automatic volume control, automatic tone control and local-distance switch. Electrical equipment: 11-tube all-wave duo-superheterodyne circuit employing four #55 tubes, one #57, three #56, two PZ Pentode and one # 80 rectifier.

The two-speed Magic Dial has four wave bands. Short-wave bands are calibrated in meters, others in kilocycles. This simplifies tuning for foreign stations and other broadcasts in the low waves. Completely automatic volume and tone control feature exclusive with Stewart-Warner, insures a pleasing fidelity of tone regardless of station power. Local-distance switch enables set operator to increase or decrease sensitivity.

#51 De Luxe Console—Early 18th Century English style wall cabinet with two doors. Curved pilasters and front of matched butt walnut. Speaker grille carved of solid walnut with supplementary decorations of hand carving.

Electrical equipment same as #50. Dominant features of this duo-superheterodyne all-wave set: Magic Dial, automatic tone and volume control and local-distance switch.

Magic dial (short wave band calibrated in meters, standard wave band in kilocycles) controlled by single knob with lever. Twin speakers employed in this set.

#52 Radio-Phonograph Combination—De Luxe cabinet in early 18th Century style same as #51. Duo-superheterodyne all-wave 11-tube circuit same as #51. Twin speakers, magic dial, automatic volume and tone control and synchro-selective, two-speed tuning.

Phonograph unit has new dual motor with pick-up specially designed to match all-wave set. Plays new type records (10 in. and 12 in.) 10 and 15 minutes respectively.

6-Tube Line

The 6-tube line consists of a Midget or table model, a Tudor Console, a Dearl Console or Tiffin Model and

a Radio-Phonograph Combination. In addition, there are two console models with built-in short wave converter and a separate short wave converter for use with AC sets of adequate sensitivity.

New Table Model, 6-Tube—Front is of matched butt walnut veneer set off by attractively formed wood molded decorations. The sides are of 3-ply walnut veneer with special bracing that gives the cabinet a strength far beyond ordinary cabinets of this size. There is a special book table with three shelves for books to be used in connection with the Apartment Model, making a most attractive unit.

Standard Tudor Model—This cabinet is designed after the manner of Louis XVI, but in many respects shows a modern influence. The front is of 5-ply butt walnut—sides and top, walnut veneer. An attractive ornamental overlay of figured butt Ash features the front of the cabinet.

De Luxe Console, 6-Tube—The cabinet of this model shows the influence of 18th Century furniture master-craftsmen. The model has six legs. The front panel is of 5-ply butt walnut veneer with an ornamental overlay of Australian lace wood. Further decorations are genuine carvings with a flanking overlay of Oriental woods. Top and sides are of walnut veneer.

*On the Pacific Coast
it's the*

R. J. NOEL CO.

Representatives for the best in radio and
allied merchandise

- **TRIAD**

Honor-Built Tubes

- **GRINNELL**

Refrigerators and Washing Machines

- **CENTRALAB**

Volume Controls

- **CONCOURSE**

Condensers

- **ERIE**

Resistors

R. J. NOEL CO.

1441 W. Jefferson Boulevard
Los Angeles, California

704 Larkin Street
San Francisco, California

The lines that dealers sell . . . the lines that manufacturers buy . . . the lines the jobber likes to stock are the lines represented by R. J. Noel Company, pioneer West Coast factory representatives for the better grade of radio and electrical merchandise. Our organization is equipped to serve your requirements.

Correspondence from the trade
is invited.

A 20 Watt D.C. Power-Amplifier for **\$ 65⁰⁰**

List with
Cunningham
Tubes

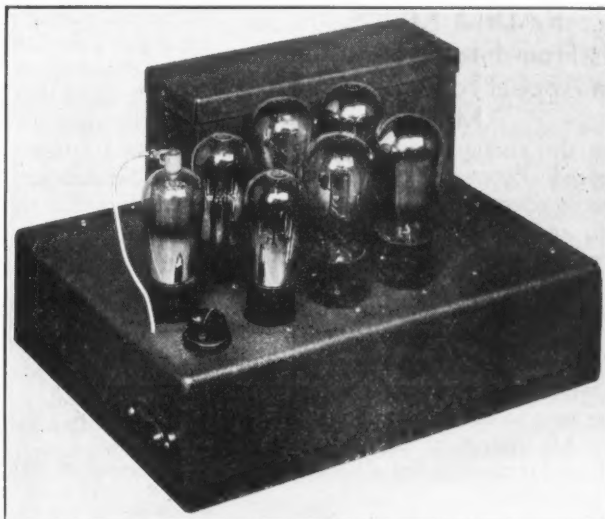
Power Amplification Now Available for Automobile Public Address Systems of a New Principle in Design—Giving Enormous Undistorted Output

Power—tremendous audio power has ever been an expensive item. A good amplifier, giving 9.3 watts may cost from \$35 to \$75 to manufacture, and utilizes a power input of at least 100 watts. One of the best amplifiers on the existing market uses 150 watts input at 110 volts 60 cycles for 9.3 watts output at 280 watts for 18.6 watts output. This is 2.8 amperes at 110 volts. If a 100 per cent efficient converter to convert a 6 volt automobile storage battery to a supply sufficient for the latter amplifier could be built, the ampere drain would be 46.6 amperes. Most converters are about 60 per cent efficient and when using such a converter, a drain of 77 amperes would be thrown on the battery. What is the solution? A gasoline driven generator which costs upwards of \$100 solves the problem. This would make a complete portable installation which would list for \$350, complete with tubes and power supply.

Such an outfit would weigh about 250 pounds and would require special arrangements to be made in order to use it in an automobile. It could not be readily transported from one car to another and would be an expensive item when tube replacements were required.

Let us look at the advantages of a new type of amplifier. It weighs about 12 pounds, takes 2.9 amperes from a 6 volt storage battery, obtains sufficient plate supply from 6 heavy duty B batteries to operate for 6 months under normal usage. The filament may be supplied from any 6 volt source capable of furnishing 2.9 amperes. May be operated from A.C. line with an inexpensive rectifier and filter system. Such an amplifier lists for \$65.00 and gives an output of 18 watts with 270 volts of plate supply and 20 watts with 300 volts. The total list for the tubes in the old type of amplifier is \$48 while the new type amplifier is completely equipped with tubes for less than \$13. If one desires to use B batteries, less than \$14 will buy a complete set.

The difference between the amplifiers generally offered to the public and the new Victory is the way the output tubes are operated. Ordinarily one is accustomed to biasing the tubes in an amplifier in such a manner that the operating point falls in the center of the straight portion of the plate current.—C bias curve. In the new amplifier the linear portion of the curve is extended to meet the zero line of the plate current and thus values of C bias is applied to the output tubes. Special input and output transformers are required to meet the peculiar conditions existing in a circuit operated under these conditions. Also, considerable power must be furnished the output tubes in order to maintain the peaks of the A. C. wave, when the grids of the output tubes are driven positive. In order to preserve proper characteristics and eliminate distortion the correct value of resistor must be inserted in the grid circuit.



The amplifier is very small being but 9 1/4" wide, 7" high and 12" long. The input is 100,000 ohms and the output furnished to meet requirements, but is standardized at 8 ohms.

The frequency characteristics are excellent being within 4 D. B. between 60 and 8,000 cycles and 10 D. B. between 40 and 10,000 cycles. Input required is less than .2 volts for maximum output. Gain is 100 D. B.

Will operate from pickup, microphone or radio. The amplifier is excellent for public address work, in churches, schools, theatres and portable installations.

Will handle twenty speakers at satisfactory room volume.

This new principle will find uses in thousands of places where the old amplifier systems are not applicable and will undersell the old system three to one for a given power output.

Wire for a Sample Today

Manufactured by VICTORY AMPLIFIERS

A Subsidiary of

VICTORY SPEAKERS, Inc.
7131 East Fourteenth Street
OAKLAND, CALIFORNIA

A Pioneer in the Manufacture of
Quality Electro-Dynamic Speakers

Tell them you saw it in RADIO

THE Filterette

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NEW SERVICE PLAN ENDORSED BY LEADING RADIO MFRS.

Profits From Interference Elimination Appeal To Radio Service Men

Since the announcement of the new Authorized Filterette Service Station plan for co-operation between radio service men and the nation's leading radio interference engineers, a great many members of the Radio Manufacturers Association, as well as leading educators in radio, have given their unqualified endorsement to this constructive program which will enable every dealer who participates in it to sell more radio receivers, to keep his customers satisfied, and to profit from his work in the elimination of radio interference.

The importance which the Philco organization attaches to obtaining the wholehearted co-operation of every Philco dealer, in this campaign to increase radio profits by eliminating "man-made static" the enemy to radio reception, is clearly indicated by the following quotation from Philco Service Bulletin No. 124:

"Authorized Interference Service Stations

"The Tobe Deutschmann Corporation, Canton, Massachusetts, are appointing what they call Authorized Filterette Service Stations throughout the country. These Stations will be trained by the Tobe Deutschmann Corporation to suppress radio interference. In the past we have forwarded some interference complaints to Tobe Deutschmann but they have never had a well established organization to take care of complaints of this kind. In the future all interference complaints received by Tobe Deutschmann will be sent to the nearest authorized service station. You can increase your radio business by helping to establish one of these authorized service stations in each section of your territory. You probably will not be in a position to do this work yourself but what we want is for you to send in the names

and addresses of radio dealers of radio service corporations that you think are best equipped to do this kind of work. After we receive them we will pass them on to the Tobe Deutschmann Corporation who will get in touch with them.

"We think that it is important for you to make sure that there are enough of these interference stations in your territory. Send in the names as quickly as possible, marked to the attention of Robert F. Herr at Philco.

Opportunity For Surveys

The City of Albany, Georgia, has just completed an interference survey under the direction of a Tobe field engineer. On April 6th an engineer was sent to Daytona Beach, Florida, to survey that district.

In each of these cases the sponsors of the survey were forced to great expense in paying the travelling expenses of the engineer from Canton to the city and return, whereas, if a capable service station were located in these districts this expense might have been saved.

It is our aim so to train field service stations that they can take up this survey work and purchase and install the necessary Filterettes, thus not only making a profit for themselves but also being of great benefit to the local community by increasing the usefulness of radio receivers now in service and making possible many new receiver sales.

Send us your application for service station appointment at once.

"For your own information the Tobe Deutschmann Corporation have published a very complete book on interference elimination that we think you should get. This book covers the subject very thoroughly and will prove to be of great value to you. Copies of it can be obtained from the Tobe Deutschmann Corporation, in Canton, Massachusetts, and the price is fifty cents (\$.50).

"Send in a list of names you suggest as interference service stations to Philco and order a copy of this book from Tobe Deutschmann and you will have made a good start towards improving the interference condition in your territory."

Tell them you saw it in RADIO

The bulletin quoted is only one of the many that are being issued by forward-looking radio manufacturers, who see in the increasingly high noise level, due largely to preventable "man-made static", a source of sales resistance which is erecting a barrier to success that must be broken down if the radio manufacturers' broadcast advertising is to reach prospective purchasers of new radio receiving equipment, and if receiver demonstrations are to result in sales for the dealer.

Individual radio dealers have long realized that local interference spoils receiver sales and results in countless unnecessary and unprofitable service calls from customers who expect that their purchase of a radio receiver is a guarantee of continuous, flawless entertainment. Without organization, however, these dealers have been powerless to act for the betterment of radio listeners and the radio industry in general.

At last the necessary organization is being made available. The establishment of a coast-to-coast chain of Authorized Filterette Service Stations is progressing rapidly, and there is now hardly a city in the United States that is not served by an interference expert. The need for the services of interference specialists in every city and town can more easily be appreciated when consideration is given to the fact that the modern home, with its many electrical aids to health and comfort, may contain as many as twenty-five or thirty separate and distinct sources of radio interference.

Of course the average broadcast listener does not realize that his home is full of interference broadcasters and, in the past, he has not taken kindly to the suggestion that the fault may not lie in his receiver or in the power lines but rather in his own or his neighbors' electrical apparatus. This mental attitude on the part of radio set owners and prospective purchasers has made it extremely difficult for the radio dealer to make worth-while progress toward improving radio receiving conditions in his territory, and has been responsible

for many futile demonstrations and lost sales.

Fortunately, definite steps are now being taken by broadcasting stations to enlighten their listeners on the subject of radio interference. Educational talks are being broadcast and radio set owners are being advised to see their local radio dealers for assistance in obtaining satisfactory radio reception. Mr. O. H. Caldwell, former chairman of the Federal Radio Commission, is presenting a series of talks sponsored by the National Broadcasting Company. In these talks, Mr. Caldwell is stressing the standards of reception which everyone should be getting. The important points emphasized are:

1. Freedom from noises, clicks, and buzzes.
2. Fidelity of tone—"reality".
3. Ability to hear nearby stations.

It is interesting to note that first requirement for satisfactory reception, as outlined by Mr. Caldwell, is "Freedom from noises, clicks and buzzes." Experience has demonstrated that, no matter how poor a receiver is being used, and no matter what distortion or lack of fidelity may be present, extraneous noises which interfere with the intelligibility of even the poorest quality of reproduction constitute objectionable interference.

Since good reception is just as important to the owner of an obsolete receiver as it is to the owner of the modern receiver, it is evident that the campaign now in progress to provide improved radio receiving conditions will meet the approval of every broadcast listener.

This is where the radio dealer enters the picture. With the leading broadcasting stations of the country advising their listeners three times daily to "See your radio dealer", there is bound to be a tremendous increase in the number of profitable service calls received by every radio dealer, for there is little doubt that the number of persons who have really satisfactory radio reception is extremely small. The fact that a flood of complaints of unsatisfactory reception has not already deluged radio dealers is not an indication that reception is entirely satisfactory but is, rather, an indication that most radio listeners do not realize that it is possible to obtain clear undistorted programs which are not punctuated by rattles, bangs, clicks and buzzes.

The development which takes place in the ideas of a purchaser of a new receiver is an interesting indication of the change in the radio listener's attitude towards extraneous noises. When a person who has not owned a radio receiver purchases his

first set, he expects that it will provide him with many hours of satisfactory entertainment. Consequently, he calls his dealer whenever anything interferes with his enjoyment of his receiver. Every dealer can verify the statement that a large percentage of the service calls received from purchasers of new radio receivers are instigated by man-made static. The unsuspecting purchaser of a radio set does not realize that the noises which interrupt his programs are not due to defects in the receiver but are more likely to be due to the perfection of the receiver which is so sensitive that it picks up undesired signals which are broadcast by electrical appara-

Manufacturers Assure Co-Operation

As we go to press, telegrams are being received from radio manufacturers assuring their fullest co-operation in this greatest of all campaigns to make real radio enjoyment for every listener a certainty. Audiola, Clarion, Crosley, Philco, Wright De Costa, and Zenith are already forwarding every interference complaint to Tobe Filterette headquarters for transmission to local Filterette Service Stations. Do not delay in applying for your territory!

tus of various types. After a number of these fruitless attempts to adjust the receiver so that clear reception will be obtained, the customer usually decides to adopt a "grin and bear it" policy and soon he accepts, as normal radio reception, musical or other programs mixed with numerous unpleasant noises.

The result of this development in the customer's ideas is that receiver troubles which should be corrected are often accepted as a part of the peculiarities of radio reception. Worn-out tubes, defective resistors, corroded connections and other sources of unsatisfactory receiver performance, which would normally be called to the dealer's attention and would result in the sale of new tubes or the repair of the receiver so that normal operation might be obtained, are often unheeded

because of the fact that an improper standard for radio reception has been accepted by broadcast listeners.

As the campaign for improved radio reception through adequate servicing of radio receivers and through the elimination of preventable man-made static progresses, radio set owners will once more become conscious of the fact that the reproduction of programs which they are receiving is far from being perfect or even reasonably satisfactory. This is bound to result in increased opportunities for radio dealers to service receiving apparatus at a profit to themselves and to the satisfaction of their customers.

After receivers have been placed in first-class operating condition, the effects of man-made static are bound to become increasingly noticeable with the result that broadcast listeners will demand that action be taken to complete the clarifying of their radio entertainment. This requires the services of an interference specialist who is familiar with the numerous sources of man-made static and who is capable of taking the steps necessary to prevent the distribution of radio interference.

Dealers who hold authorized Filterette Service Station appointments are the logical persons to be called on for this type of assistance. These dealers have received special training in interference elimination as covered in the Tobe Interference Course and are in constant communication with the pioneers in the development of Filterettes, the radio noise removers. These dealers are privileged to utilize the services of the Tobe Deutschmann Filterette Engineering Department in the solution of any interference problem and in addition are supplied with sales helps, advertising material and other data calculated to assist them in making the elimination of man-made static a profitable part of their business.

Among the most important features of the Filterette Service Station plan is the fact that interference inquiries received by leading members of the radio industry are referred by them to the Tobe people.

TOBE DEUTSCHMANN CORPORATION, FILTERETTE DIVISION, CANTON, MASSACHUSETTS.

Gentlemen:

Please send me.....copies of "RADIO NOISES AND THEIR CURE" (fourth edition) at 50 cents per copy. I am enclosing \$.....
Please send me your free bulletin 8619-B telling me how to obtain an Authorized Filterette Service Station appointment.

My name is.....

My address is.....

I am a.....dealer. Street City State

R-432

Tobe Deutschmann Corporation

Filterette Division

CANTON, MASSACHUSETTS

The Acknowledged Authority on Radio Interference—Makers of FILTERETTES, the Accepted Remedy

Tell them you saw it in RADIO

IF YOUR RADIO BUSINESS ISN'T WHAT IT SHOULD BE!

1931 has been Silver-Marshall's best year, because . . .

Silver-Marshall Superheterodynes are sold **DIRECT** to
DEALERS.

The jobber's profit is used in more profit for the dealers
and lower list prices.

Silver-Marshall has a **COMPLETE LINE.** Full-size super-
heterodyne consoles to sell from \$49.95 to \$139.50.

In addition to 6, 8, 9, 10 and 12-tube supers, Silver-
Marshall dealers have an 11-tube short-and-long wave super.

Silver-Marshall has a unique \$10.00 plan to cover trade-
ins, time payments, etc. They do not come out of the
dealer's pocket.

A half-million dollars has been spent in the last six months
to advertise S-M receivers.

Silver-Marshall dealers have exclusive territory.

Those are **SOME** of the reasons. We will be glad to
tell you the rest of them.

SILVER-
MARSHALL Inc.
6415 W. 65th St.
Chicago, U. S. A.
Please send me all
details.

Name.....

Address.....

SILVER-

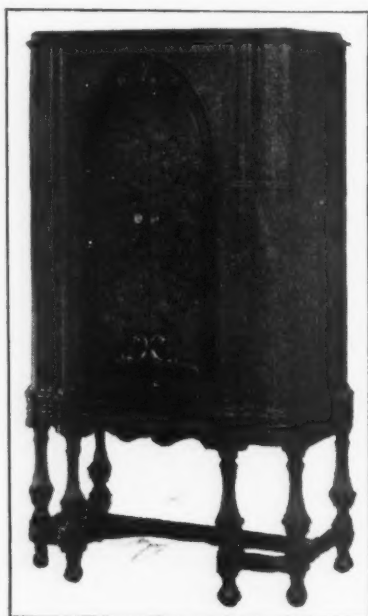
Home Office: 6415 West 65th Street, Chicago



Model C-24. 12 tubes . . . superheterodyne . . . 3-unit construction . . . twin pentodes . . . double tone control . . . built-in tone chamber . . . meter tuning . . . automatic volume control . . . built-in aerial . . . 45-inch door console. A finer receiver is not possible. Complete with Eveready Raytheons . . . \$139.50 list.

MARSHALL Inc.
S-M Sales Co.: 224 East 16th Street, Los Angeles

Tell them you saw it in RADIO



Silver-Marshall's Trade Show Announcement

SILVER-MARSHALL

SILVER-MARSHALL announces a number of new models to meet all price and quality requirements, ranging from five to thirteen tubes, all superheterodynes and priced from a low of \$29.95 to a top of \$139.50 for the beautiful thirteen tube model Q Deluxe illustrated. These models introduce a number of totally new features, and provide performance and price which the manufacturer guarantees superior to all competition.

For example, the new Q Deluxe is a thirteen tube all wave superheterodyne, having the new patented Silver-Marshall circuit providing one accurately calibrated dial for broadcast and short wave bands. It has Automatic volume control and meter tuning. But that isn't all—it has three speakers, "Class A Prime" audio amplification, and noise suppression. Its power output is ten watts, its selectivity absolute 10 kc., and its sensitivity one

microvolt absolute. It has tone control, and a totally new noise suppression system allowing noise to be eliminated for any particular location. Its tone quality Silver-Marshall guarantees to be superior to any and all other radio sets, irrespective of type or price. Its closed door cabinet is 45" high, 26" wide, and is made of the finest specially hand picked and hand laid stump walnut veneers with rounded front corners. Yet it is priced at only \$139.50 list for more features than can be found in any other radio set.

Other Silver-Marshall models include five tube table model superhets of unique design and appeal, and ten, eleven, and twelve tube broadcast, broadcast and police band, and broadcast and short wave, superhets having one, two and three speakers, featuring the new tubes, A. V. C., meter tuning, noise suppression and "Class A Prime" audio amplification, at most interesting prices.

W. BERT KNIGHT, INC.

FACTORY REPRESENTATIVES

1646 WEST ADAMS ST.

LOS ANGELES, CALIF.



BERT KNIGHT

REPRESENTING ON THE COAST

CROWE NAME PLATE AND MANUFACTURING COMPANY

Dials and Escutcheons

MEISSNER MANUFACTURING COMPANY

Radio Inductances

MATCHLESS ELECTRIC COMPANY

Pilot Light Bulbs

OHIO CARBON COMPANY

Ohiohm Carbon Resistors and Ignition Suppressors

CORNELL ELECTRIC MANUFACTURING COMPANY

Cub Condensers

AMERICAN STEEL PACKAGE COMPANY

Defiance Variable Condensers

H. H. EBY MANUFACTURING COMPANY, INC.

Sockets, Volume and Tone Controls, Binding Posts, etc.

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Fine Radio Tubes

SORENG-MANEGOLD CO.

Special Switches

UNIT REPRODUCER CO.

Hydro Electric Pickups

Radio Show Headquarters - STEVENS AND ST. CLAIRE HOTELS

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The Seven Models of
CROWN RADIOS
 embody the best of nationally advertised parts.

CROWN DEALERS receive a UNIFORMLY good product of
 the highest quality at all times.

The line consists of
 A FOUR-TUBE MIDGET :: A FIVE-TUBE COMPACT
 A FIVE-TUBE SMOKING STAND MODEL
 A SEVEN-TUBE COMBINATION :: A THREE-TUBE CONVERTER
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Featuring
 TONE - - - DISTANCE
 TROUBLE FREE PERFORMANCE

CROWN RADIOS
 give your business a foundation as strong as THE ROCK OF
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If there is no CROWN DEALER in your community, write for our attractive dealer proposition

CUSTOM BUILT RADIO CO.
 4955 Hollywood Boulevard - Hollywood, California

Don't Misrepresent the Short-wave Set

R.M.A.'s Statement Reveals Many Unethical Practices

NEW radio entertainment in the new short-wave receiving sets, their wider sphere and also limitations, and information for the radio public for their best operating results, are detailed in a statement just issued by the Radio Manufacturers Association, Inc., comprising virtually all prominent radio producers. The statement was prepared by the Association's Engineering Division, approved by its Board of Directors, and deplors exaggerated advertising claims for the new short-wave receivers, while pointing out their wide field of new radio entertainment and service.

The statement of the R. M. A. to give the radio public and industry authoritative and actual facts regarding radio development, follows similar informative statements from the Association on television experimentation, and other new radio progress from radio laboratories. The statement on short-wave reception follows:

"The importance of short-wave reception in the past year is demonstrated by the wide interest shown in commercial short-wave receivers, the acceptance by the public and the dealer of a well-designed and engineered short-wave product, and the appeal which short-wave reception has to the user, especially when reception direct from foreign countries is possible.

"Unfortunately, however, very exaggerated advertising claims have been made regarding reception on short waves. Reception from stations in London, Paris, Berlin, Africa, Honolulu, Cuba, South America and other distant points, has been almost guaranteed at any time of the day or night with perfect clarity and fidelity. Thus, the misguided public is led to many disappointments when one of these short-wave receivers is purchased.

"This statement is intended to make clear just what can be expected in short-wave reception with receivers properly engineered and designed.

"The term 'short waves' is used to indicate wavelengths shorter than those employed in the standard broadcast band—that is, below 200 meters. Short-wave reception at present includes wavelengths down to about 15 meters.

"The transmission and reception of short waves have been studied by the most brilliant engineering minds in the world. Many of its phenomenal characteristics

are very well known and much has been accomplished in obtaining reliable and dependable broadcasting in the short-wave band. Successful trans-oceanic telephony on short waves is well known to everyone and re-broadcasting of short waves from foreign stations on elaborate national broadcasting networks has passed beyond the stage of engineering achievement and is taken as a matter of fact by the public. These systems, however, have been developed with considerations given only to service and dependability and to obtain these two important requisites the cost of the associated apparatus has run into considerable sums of money, notwithstanding the time and cost for engineering research and development of the systems. Even with these elaborate and expensive systems service on short waves has been interrupted by atmospheric disturbances and other factors beyond the control of the systems used.

"In commercial short-wave reception, in which entertainment must be afforded, the problem is to design a receiver capable of good and satisfactory reception. Unusual and miraculous performance can be expected of this type of receiver no more than with a well-designed broadcasting receiver. No one in New York with a standard superheterodyne broadcast receiver would expect to receive a station from Los Angeles, California, consistent-

ly, although the receiver may be perfectly capable of this reception under favorable conditions and yet many users of short-wave receivers expect 'round the world reception every day, in all seasons. The cost of short-wave receiving equipment increases at a greater ratio with improvement in operating characteristics than the cost of regular broadcast equipment.

"Many factors influence the transmission and reception of short waves. Day-time reception is better on certain short waves than night reception, whereas in other short-wave bands the reverse is true.

"The short-wave stations of the world are allocated approximately as shown in the table below.

"It has been common practice to mark dial calibrations for short-wave receivers in wavelengths. In order to be consistent with dial calibrations now standardized on broadcast receivers, kilocycle or megacycle markings should be employed on all short-wave receivers in the future. All important American and international log books and newspapers are cooperating in bringing about a standardization of kilocycle or megacycle markings.

"Below 25 meters reception is generally more satisfactory during the day than at night, whereas in wavelengths above 50 meters night-time reception is better. It has been found experimentally that

(Continued on next page)

Police Stations	
1500 to 2470 kilocycles—	200-121.5 meters
Television	
2000 to 3000 kilocycles—	150-100 meters
Aircraft	
1600 to 1700 kilocycles—	187.5-176.5 meters
3070 to 3256 kilocycles—	night transmission—97.7-92.2 meters
3452 to 3492 kilocycles—	night transmission—86.9-85.9 meters
5500 to 5690 kilocycles—	day transmission—54.6-52.7 meters
6155 to 6410 kilocycles—	day transmission—48.75-46.8 meters
Amateur	
3500 to 4000 kilocycles—	86-75 meters
American and Foreign Broadcasting	
3660 to 15,000 kilocycles—	82-20 meters
(a little telephony and experimental transmission)	
Mixed Telephony and Broadcasting	
9800 to 23,000 kilocycles—	30.5-13 meters
New Proposed Television Band	
35,000 to 80,000 kilocycles—	8.5-3.75 meters

wavelengths below 20 meters can be heard only when the patch between the transmitting station and the receiver lies entirely in daylight. For wavelengths between 20 to 35 meters, reception is best when either the transmitter or the receiver lies in darkness, but not both.

"It is important to keep in mind that the time of day must be taken into consideration in reception of short waves. When it is 8:00 P.M. in New York, it is 10:30 A.M. of the same day in Melbourne, Australia; 1:00 A.M. of the next day in London, England; and 2:00 A.M. of the next day in most of Europe. At these hours the European broadcasting stations are seldom operating. Consequently, in tuning for stations in Europe on the American continents, the best reception is obtained during the afternoon or early evening. Australian stations, on the contrary, will be received in the early morning.

"Schedules, especially from foreign short-wave stations, are difficult to obtain accurately. There are, however, definite schedules kept by some of the large foreign stations and these schedules should be ascertained before attempting to receive them. Reception is the primary factor in the sale of a short-wave receiver. Unless a number of stations can be heard and unless this reception is reasonably good, interest in short-wave reception will be lost and sales will suffer accordingly. Good reception can not be had simply by turning the dial. It is necessary to use one of the various shortwave station logs to know where to find the stations, and it is necessary to know when the stations are on the air.

"The seasons of the year materially affect short-wave reception. Better reception on the shorter waves may generally be expected during the summer months and better reception at 50 meters and above during the winter months. The lower wavelengths are affected least by atmospheric disturbances or static and good results may even be obtained in mid-summer during a severe thunderstorm. On the other hand, these shorter waves are affected more by interferences from trolleys, dial telephones, automobiles, electrical appliances, etc., than the standard broadcast waves.

"In all broadcast waves, reception is known to be received by two paths from the transmitting station, that is, either by the 'ground wave' or by the 'sky wave.' Reception from the ground wave of the transmitter is extremely reliable but can be received only over a comparatively short distance. On the other hand, reception from the path of the sky wave from the transmitter may be at considerable distances. Sky wave reception, however, is critical to seasonal changes, night and day changes, and may develop large 'skip-distances', where the station can not be heard. By 'skip-distance' is meant the distance to points in a certain area out-

side the ground wave range which the sky wave does not touch, making reception in that area impossible. Skip-distances are not stable and may change considerably from hour to hour and from day to night. The sky wave and skip-distance theories explain why short-wave reception may be good one day and very poor the next.

"Reception within the ground wave should be good at all times unless shielded by intervening buildings, or unless the local interference at the receiving station is excessive. It is seldom that the ground wave of a short-wave transmitter will be heard. The reliable ground wave distance is approximately 90 miles at 100 meters and only 15 miles at 15 meters. Reception of short waves is mostly obtained from the sky wave of the transmitter. The reliable sky wave, depending whether it is summer or winter, noon or midnight, ranges approximately from 90-2500 miles for 100 meters; 300 miles to an infinite distance for 25 meters; and 700-4000 miles at noontime reception for 15 meters. At midnight for wavelengths lower than 15 meters, the transmitter can only be received within distance of the ground wave. At wavelengths below $7\frac{1}{2}$ meters, there is no sky wave effect whatever and transmission follows more closely optical laws or line of sight transmission.

"The reliable range of the sky wave will vary slowly from season to season, but very rapidly from day to night. The 'skip-distance' is a minimum at noon and increases to a maximum at midnight. The most unusual conditions of reception will be encountered at sunrise and sunset when the most rapid changes occur. The 'skip-distance' is greater when the wavelength is shorter. It is for this reason that wavelengths below 20 meters are useful only during daylight and then over great distances. The maximum reliable range is subject to wide variations due to factors such as static, sun spots and magnetic storms.

"Full entertainment value of short-wave reception is governed by the type of receiver used, the care with which it is installed, and conditions surrounding the receiver. Fading encountered on the short waves, especially at a considerable distance from the transmitter, is much more apt to be destructive of quality than fading on the standard broadcast band. Selective fading and rapid periodic fading are both productive of distortion in the modulation of a radiophone signal. Power has not as much to do with the propagation of short waves as the longer wavelengths. In general, however, greater distances can be covered with less power on the shorter waves.

"Aerial installation for proper short-wave reception is much more important than for reception with a standard broadcast receiver. The aerial should be better insulated, as high as possible, and spaced from metal as much as possible.

"By understanding the foregoing it is

plain to see that many factors control reception at the short waves. Influences beyond the control of the systems used make it impossible for reliable receiver manufacturers to guarantee long distance short-wave reception at any time of the day or night. Under favorable conditions it is possible to receive these distant stations with clarity and fidelity, especially in locations remote from metropolitan areas where man-made interference is at a minimum.

"Short-wave receiving development and design are requiring the skill and technical experience of the best radio engineering talent. Efficiency in receiver design is being reached with short-wave converters, short-wave receivers, and all-wave receivers in which the superheterodyne principle is employed.

"The short-wave receiver has a place in the field of engineering. Many phases of its engineering are being considered by committees of the R. M. A. Engineering Division, such as standardization of dial markings, choice of intermediate frequency and other factors. The short-wave receiver is capable of entertainment value under favorable conditions. Too much stress, however, must not be employed in claims of remarkable reception which can not be substantiated or duplicated readily.

"The members of the Radio Manufacturers Association can do much toward stabilizing the growing interest in short-wave reception by advertising and stating the true facts. In this way the confidence of the public is assured and a satisfied customer will aid in the future success of the radio industry.

Arcturus Markets New Tube Tester



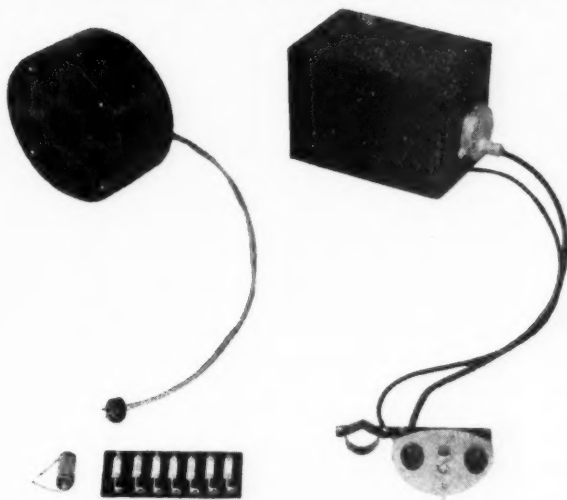
THE new Arcturus tester is provided with a socket for every popular type of tube and also has two spare sockets that can be wired for new tubes that may appear in the future. There are also two pre-heater sockets with short test combined, and in the event of a shorted tube a light flashes and the word "short" appears. The large 4" meter on this board has a colored scale which comprises three readings: Satisfactory, doubtful and unsatisfactory.

EL REY AUTO RADIO

WITH REMOTE CONTROL

\$49⁵⁰
LIST

INCLUDES
REMOTE
CONTROL



\$21⁹⁵

TO DEALERS
(Less "B"
Batteries)
*Cash with
Order.*

SPECIFICATIONS

FIVE TUBES including:
Three No. 51 Multi Mu
One No. 24 Screen Grid
One No. 47 Pentode

EIGHT-INCH FULL DYNAMIC SPEAKER,
mounted in box, easy to mount.
SEVEN SPARK PLUG SUPPRESSORS
ONE CONDENSER FOR GENERATOR
TEN-FOOT SHIELDED CABLE

All EL REY Auto Radios Equipped With Remote Control

Dealers

El Rey's new automobile radio sets, all of which are fully equipped with remote control, will prove to be fast sellers this summer with a fair margin of profit, though selling at low prices. They out-perform the old-type auto radios.

Specially designed circuit includes up-to-the-minute developments.

Most sensitive of all radio sets.

Remote control works at maximum peak efficiency at all times.

Finest standard parts used throughout.

Uniform tone; super selectivity.

Fully complete, yet compact.

See Other Advertisement in this Issue of "RADIO" for our Electric Sets

EL REY RADIO MANUFACTURING CO.

8406 SOUTH BROADWAY

LOS ANGELES, CALIFORNIA

R. C. A. Denies Monopoly

"Cross-Licensing Agreements Were Negotiated with the Full Knowledge of the Government," statement says

RATHER than a monopoly, as charged by the Government, there exists in radio spirited and unrestrained competition, with broadcasting stations in competitive hands and with plant capacities for radio sets and tubes vastly in excess of market demands, according to the answer filed by the Radio Corporation of America to the amended and supplemental petition of the Government in anti-trust law proceedings in the United States District Court of Delaware.

The answer points out that the patent cross-licensing agreements between certain of the principal defendants in 1920 and 1921, which the Government has attacked, were not entered into secretly and with intent to violate the law, but were negotiated with the full knowledge of the government, were considered and approved in the presence of a representative designated by the President of the United States, and were submitted to the Department of Justice before execution.

"Neither the Department of Justice nor said government representative objected to or criticized any of these agreements," said the reply, "this defendant then, as now, being advised and believing that they were legal."

The cross-licenses were necessary, the Radio Corporation stated, because the patents held by different concerns were supplementary and overlapping, making it impossible as a practical matter for any of these concerns to manufacture efficient and reliable radio apparatus. The result of the cross-licenses was the development in radio without parallel in any other industry in so short a time.

The answer denies that the defendant company has created or attempted to create a monopoly, but on the contrary has granted licenses under its patents on reasonable terms with the result that licensees have been enabled to compete with the defendants without restriction as to selling prices or quantity. They are licensed to use all patents covered by the cross-licenses, and in consequence there has been the most intense and active competition in radio apparatus.

In analyzing competition in the various fields of radio under attack by the Department of Justice, the answer states that:

1. In the manufacture of radio broadcast receiving sets there are more than thirty-five concerns in open, intense and unrestrained competition, having productive capacity of more than 20,000,000 receiving sets a year compared with the present annual market consumption of

about 3,500,000 sets. The defendants charged with a monopoly do less than 20 per cent of the total receiver set business.

2. Radio vacuum tubes are manufactured by about thirty concerns in open, intense and unrestricted competition, having a productive capacity of about 150,000,000 tubes a year compared with the present annual market consumption of about 50,000,000 tubes. The defendants charged with a monopoly do less than 40 per cent of the total tube business.

3. There are more than 600 radio broadcasting stations licensed by the Federal Radio Commission, while the Radio Corporation of America, including its subsidiaries, owns but eight broadcasting stations and leases four others. All of the other defendants in the radio litigation own only five additional stations. These stations are in active competition with other stations of like power and scope.

4. Radio communication is carried on by R. C. A. Communications, Inc., a subsidiary of the defendant, in active competition with many other communications companies, both domestic and foreign, and this company carried less than 20 per cent of the total trans-oceanic telegraph communication between the United States and foreign countries and less than one-tenth of one per cent of the domestic communications of the United States. Among its competitors are the Western Union Telegraph Company, operating cables and handling domestic traffic; International Telegraph and Telephone Company, controlling Postal Telegraph Company, Commercial Cable Company, All America Cables, Commercial Pacific Cable Company and Mackay Radio and Telegraph Company operating circuits to South America, Europe, Honolulu, Manila and also services to ships at sea; American Telephone and Telegraph Company with radiotelephone to Europe and South America; French Cable Company; Great Northern Telegraph Company, Italcable Company; German Cable Company; and Imperial and International Communications, Ltd., and others.

The answer refers to the cross-licensing of patents as follows:

"This defendant denies that the patent cross-licenses and other agreements referred to in the amended and supplemental petition restrained trade and commerce in radio, or radio apparatus or devices or otherwise. Those agreements were lawful, reasonable and in furtherance of the public interest, enabling the creation and

development of the modern art of radio by relieving a patent deadlock.

"Prior to 1919, the radio art was largely experimental and there was no substantial public use of radio instrumentalities because no concern up to that time had offered efficient and reliable apparatus for radio communication for sale to the public. The principal concerns in the radio field had supplementary and overlapping patents, which, as a practical matter, made it impossible for any of them to manufacture reliable or commercially useful radio apparatus without infringing the adversely held patents of others and subjecting themselves to injunctions and recoveries of profits and damages. The United States Government recognized this situation, and being compelled by the necessities of the World War to obtain radio apparatus adequate to the satisfactory conduct of radio communication, created an involuntary cross-license situation by obtaining radio apparatus utilizing patented inventions adversely held with respect to each other under government guarantee of patent protection to the manufacturer. This government involuntary cross-licensing did not extend to radio apparatus made for the public. In 1919 and subsequently, the patent cross-license agreements were entered into between various of the defendants, not secretly nor with any intent to violate any law of the United States, but, on the contrary, with full knowledge of the government and for the purpose of enabling the development of the radio industry. The patent cross-license agreements complained of between this defendant and the defendant American Telephone and Telegraph Company . . . , and the defendant Westinghouse Electric & Manufacturing Company . . . , entered into in 1920 and 1921, were considered and approved by this defendant's board of directors in the presence of an admiral of the United States Navy, who had been designated by the President of the United States to sit with this board and advise with it concerning matters of public interest in accordance with the specific provisions of its charter and by-laws, and were then submitted to the Department of Justice of the United States before execution. Neither the Department of Justice nor said government representative objected to or criticized any of these agreements, this defendant then, as now, being advised and believing that they were legal.

"The result of the patent cross-licenses was to bring about a development in the

(Continued on next page)

field of radio without parallel in any other field within so short a time, and to make possible the development of world wide radio transoceanic telegraph and telephone systems, efficient ship to shore communication, broadcasting, and many other uses of radio apparatus. This defendant denies that it has maintained or attempted to maintain a monopoly in the results of this development, or that such has been the purpose or effect of the agreements, or any one or more of them, referred to in said petition, and alleges that it has not restrained trade but on the contrary it has granted many patent licenses, on reasonable terms, to companies other than the defendants, which licenses have enabled the licensees to compete with the defendants without restriction as to selling prices or quantity, by the use of all of the patents covered by the cross-licenses, so that, as a result of the granting of these licenses, the most intense and active competition in radio apparatus has grown up and exists today throughout the United States."

ANNUAL REPORT OF MAGNAVOX

Almost Two Millions in Assets Is Reported

THE Balance Sheet and Profit and Loss Account of the Magnavox Company, Ltd., for the year ending December 31, 1931, shows the year was a very trying period as evidenced by the fact that although the company's unit sales showed a very satisfactory increase, it suffered a drastic decline in price values.

In the Condenser Division, a unit volume increase was shown of 188 per cent over 1930, while the average net unit selling price in this division showed a decrease of 64 per cent.

In the Loud Speaker Division, a unit volume increase was shown of 37 per cent with a decrease of 42 per cent in the average net unit selling price.

Due to a policy of strict economy, there were substantial savings of 41.5 per cent in operating expenses during 1931, and reductions in the cost of products manufactured were also effected. These savings, however, were not sufficient to offset the heavy decline in prices mentioned above.

Since the audit of accounts, the cash position has improved as a result of collections from Australian and English subsidiaries on account of credit advances made to them during the year 1931.

Both the Australian and English subsidiaries are showing quite gratifying and profitable progress. With a tariff and exchange differential existing in favor of British manufactured products, Magnavox is quite optimistic concerning their operations during the year 1932.

The company is aggressively prosecuting the patent suits filed against several infringing manufacturers and during January, 1932, concluded a trial as joint

plaintiff with Colonel Ralph D. Mershon (under the Mershon Condenser patents), against J. S. O'Neill, distributor of Sprague Specialties Company products; and in February, a suit against Hart and Reno, distributors of Stewart-Warner products, (under the Magnavox Dynamic Loud Speaker patents).

The Condenser Division is enlarging its activities to include the manufacture of the Semi-Dry Electrolytic Condenser and will now be in a position to furnish both the Semi-Dry and Wet Electrolytic types, thus taking care of a wider range of the requirements in the Filter Condenser field.

As the result of development in the Condenser Division, it is contemplated that this division will enter the industrial field during the year 1932, providing conditions show some degree of improvement. It is estimated a large and potential market exists for these products in the Condenser Motor and Power Factor Correction fields.

Kolster Adds 300 Employees

A SUBSTANTIAL increase in the working forces in the last month has been added at the factories of Kolster Radio, Inc., at 360 Thomas street, Newark, N. J.

"In the last month we have added more than 300 employees," announces S. T. Thompson, vice-president of Brandes Products Corporation, the manufacturing subsidiary of Kolster Radio. "We have found this to be necessary in order that our production might keep pace with our sales. The number of workers we now have is sufficient to take care of our production for the next two months. In June we expect that as increased orders are received from dealers in all parts of the country, this force will be materially augmented.

"In spite of the impression that might be conveyed by our increase in personnel, the present season is really the off season in radio manufacturing. While the Kolster factory is busy now, we look for a considerably busier time this summer—a time, incidentally when many industries are normally at a low ebb.

"In the last three weeks we have shipped several thousand sets out of the factory. These sets are all made up on order. They are sold. According to our present plans, we shall keep on the same production schedule for the next eight weeks. Present indications are that in June we shall be obliged to step up our output considerably."

DeForest Net Sales Gain 80%

THE DeForest Company's monthly sales, as represented by actual billings, have increased each month over the preceding month this year. February net sales in dollars were 14% greater than January. March sales on the same basis were 19% greater than February,

and April sales to date are sharply (80%) ahead of the corresponding period in March.

Unfilled orders on hand are greater than at any time since 1929.

These increases are "upstream" against the usual seasonal trend—depression and all. It is significant of fundamental readjustments and DeForest organization improvement.

Receiving tube sales have increased each month along with the general line of DeForest products which include 60 different types of tubes, broadcast transmitters, police department transmitters, U. S. Navy, U. S. Coast Guard and U. S. Signal Corps radio transmitters and signal systems.



Henry Wolff Enters Refrigeration Field

Mr. Henry Wolff, formerly of the Gray & Danielson Mfg. Co., makers of Remler products, has been appointed to have charge of the metropolitan territory for Kierulff & Ravenscroft, Inc., California distributors of Mayflower electric refrigerators, effective at once.

Mr. Wolff will be remembered for his activities in the dynamic speaker unit days, while he was with the Jensen Co., and is well known in this territory.

In commenting upon his recent change Mr. Wolff states that he feels that refrigeration offers the greatest opportunity for household appliance merchandising at the present time, and that the potential market for this product is by far the greatest that it has ever been.

Mayflower products are made by the Trupar Mfg. Co. at Dayton, Ohio, a company of long experience in this business, and whose activities are national in scope.

Well, good luck to you, Henry, in your new venture.

How to Make Your Service Department Pay

DEALER SHOWS SERVICE PROFIT Study of Costs Put End to Price Cutting

By A. V. TOBEY, *Tobey Radio Service*

I HAVE operated a specialized radio repair business for over seven years and have come in contact with a large number of the men in the same field in this city.

There is a great deal of complaint about the business not bringing a fair return for the effort involved. I agree heartily. From my observation a very small percentage haven't the least idea what their business is earning them.

Most of us are just plain mechanics, that is, our brain effort has to be stimulated to function by the fact of having some piece of apparatus or radio job in our hands which calls for a definite trend of thought and giving us this combination we are off in a cloud of smoke. We do a darn good job electrically or mechanically, but when the landlord comes around the dollars are missing and finally, "Well, I'll cut prices, work longer hours and then I'll be able to get by." Don't kid yourself, you are getting nowhere fast.

Let's show a little business sense in this game. Take as an example some successful business and observe its procedure. First, get at the original investment and what that investment has to earn. All other items in the conduct of the business are based on making that original investment pay that return. The investment may be in dollars or it may be in specialized training. In our case it is the latter and the training costs us dollars, so it has to bring us a definite return.

Looking at it from another angle. Suppose someone asked you to work 12 hours a day for \$3.50 to \$4, operate the business, talk to customers, answer service calls and what not, you wouldn't be so hot for it, but you are probably doing it and don't know it.

Get out that pencil and paper and do a little figuring. Your car is costing you at least 5 cents for every mile you drive it. On the basis of a well-trained radio serviceman your time is worth at the least \$6 per day or 75 cents per hour.

Now, if you worked eight hours a day at 75 cents per hour, plus 5 cents for every mile you drove, you would be getting by in these times, but most of us are not. Look at the amount of dead time you have and the number of additional hours over what you estimated on some of these jobs, add the cost of keeping up your store and where are you?

I challenge 80 per cent of you small service shop operators to be able to tell

what your daily net return is, or what wages you are receiving in the management of your own business. Most of you don't know; some of you do know and just grin and bear it and hope for the best.

You fellows who are running a haphazard shop are hurting yourselves and a lot of other hard-working fellows. You went in this business to earn a fair wage and most of the fellows don't seem to be getting it.

The only hope for us is to have some definite means of knowing what we are earning. You can only do that by keeping an accurate account of the conduct of your business.

If I were asked for a slogan for a mechanic in business, I would offer, "To know at the close of each day how much business I did and what my wages were before I close my eyes to rest."

It is not hard to do and does not require an elaborate process, but it does require about one-half hour of your time each evening.

I have a system of my own origination, suitable for a repair and sales business up to \$1000 gross per month (over that amount hire a bookkeeper). I've used it for five years, and it clicks.

R. M. A. Makes Tax Protest to Senate

UNFAIR discrimination against radio by the proposed 5% special sales tax of the House Revenue Bill was stressed by leading radio manufacturers today at a hearing before the Senate Finance Committee. The hearing was accorded the Radio Manufacturers Association, representing over 95% of radio manufacturers. Disaster as well as discrimination would result from the House bill, the Senate Committee was told at the R. M. A. hearing. Reduction at least to 3%, on the same basis as the proposed automobile tax, was urged and the Senators were told that a general sales tax, or a general manufacturers' tax, exempting food, clothing, medicine, etc., would be distinctly preferable and more fair than the proposed discriminatory tax of the House bill. It was urged that the latter is an undeserved penalty on a few industries.

The radio industry hearing before the Senate Committee was in general charge of Mr. Frank D. Scott, Washington legislative counsel of the R. M. A. It followed

a conference in Washington last week of a large number of leading receiving set and tube manufacturers of the R. M. A. The radio industry hearing was represented by a committee including Messrs. Frank D. Scott, James M. Skinner, president of the Philadelphia Storage Battery Company, and Paul B. Klugh of the Zenith Radio Corporation.

Mr. Skinner, in the maiden speech of his career, dealt with the broad aspects of the proposed tax and declared that the 5% tax would seriously cripple, if not destroy the radio industry. Mr. Skinner stated the industry had been "seriously sick for over two years and would be sicker before it got better." He predicted that no radio manufacturing company in the country would show a profit in 1932 and that the serious conditions were real and not fancied. His maiden speech brought compliments from Senator Reed of Pennsylvania and Senator Shortridge of California.

Mr. Klugh expressed to the committee a vigorous protest against being selected out of a large list of manufacturers for a tax. He questioned whether the industry could survive if a 5% tax were imposed. Mr. Klugh declared that a 5% tax would decrease the present reduced sales even to the extent of 20%. The public would suffer, according to Mr. Klugh's statement to the senators, as the tax would have to be passed on to the consuming public. Mr. Klugh asserted that prices would have to be increased while sales diminished, causing loss in volume and resulting in greater production costs.

Emphasis was placed in Mr. Klugh's vigorous statement to the committee on the importance of practical uses of radio in the nation's life and homes. Radio gives service to the farmers on weather, stock, and produce quotations, Mr. Klugh pointed out, together with information to airplanes, both passenger and mail. Information by radio to the police departments in nearly every large city in the protection of life and property was also stressed by Mr. Klugh. He declared that radio was quite as much a necessity of modern American life as the automobile.

Mr. Scott urged that the tax be reduced at least to the 3% rate proposed for the automobile. The R. M. A. counsel also drew a picture of general industry conditions and cited that since 1928 there had been a mortality among manufacturers of 50% and that the depression had necessitated a reduction of about 80% in employed personnel.

"A 5% excise tax is unjust," Mr. Scott told the senators, "because it is an undeserved discrimination against the radio industry. It is impractical because such an excise tax would stifle business and thus retard business recovery. The damage to the industry would in all probability be greater than the revenue derived, and the amount possible to collect from the radio industry would represent at best only a very small item."

What The Pacific Coast Manufacturers Are Doing

Many Midget Manufacturers Turning To Automobile Radio

IN LOS ANGELES, where the midget set was born, nursed and fondled for a year before it finally took the country by storm and forced most manufacturers to either build midgets or get out of the radio business, a decided about-face is now evident. Not because the midget is no longer a sales factor but because the rank and file of midget maker was one of restricted sales, mainly in the metropolitan and suburban trading area of Los Angeles. With a saturation point almost reached, topped by the business depression, the small-fry have closed shop and entered other fields of endeavor. Insufficient capital and limited production facilities forced most of the "peanut venders" to stay within the confines of their own county. A few, financially able to conduct a national advertising and sales campaign, found the domestic and foreign market most profitable for a few years. But with the announcement from eastern manufacturers that they, too, had capitulated to the making of the lowly midget, the domestic sales of Pacific Coast manufacturers fell sharply. Today but a few remain. A comprehensive survey of the field shows that most of them lost money. There are a few notable exceptions.

E. R. Patterson, owner of the Patterson Radio Co., has a going concern. His plant is a model of efficiency. It is paid for. The sales of his product were mainly confined to department store channels through which Patterson still moves a major portion of his daily production. Patterson has money in the bank . . . just recently bought and paid for three printing establishments and is in the radio business to stay. Elsewhere in these pages is the announcement of a most modern line of all-wave receivers which he announces for the new radio season.

Another going-concern, one of the few remaining midget makers in the field, is the Jackson-Bell Company. Associated with the Bell folks is Alex Hirsch, successful retail merchant along radio row in Los Angeles and the former owner of Flint Radio, makers of the first low-priced midget superheterodyne. Alex is devoting his attention to the new Jackson-Bell all-wave receiver which has found a wide and ready market.

With the passing of many of the midget pioneers others have taken their places. Successful among the comparatively new manufacturers is the El Rey Manufacturing Co. Their product is not one of

mass production but rather a precision built instrument of the better grade and a gratifying market is being developed for it. The company is well organized and financed and promises some exceptionally new developments for the coming season.

American Radio & Television Corp. is doing a big business with the new "AUTOPAL" automobile radio which lists for \$29.95. William Gill, owner of the company, has designed an auto radio which operates on 30 volts "B". The coils are "Litz" wound. The set goes down in wavelength low enough to bring in the police calls.

Custombuilt Radio Co. continues to prosper through the manufacture of an almost "hand made" job. Beautiful in appearance and exceptional in performance. Custombuilt dealers have loyally pushed the product with a resultant profit from sales and by expressed satisfaction on the part of the purchaser.

Consolidated-Mission-Bell has done little of late in the line of set-building but has been highly successful in the sales of a new automobile radio equipped with a "B" eliminator which has withstood the acid test. The factory is working on a full production schedule and auto radios and eliminators are not yet being built in sufficient quantities to supply the ever-growing demand.

Willard Radio continues to go merrily along with its sales of the low-priced WIL-LARD vest-pocket-midget. Charlie Weinberg is directing the Willard sales and reports booked-up orders weeks ahead of manufacturing schedule.

Los Angeles Radio Manufacturing Co. has also curtailed production of the small midget line but has enlarged its facilities for building a most efficient new seven tube automobile radio in which the newest types of tubes are found. A brisk demand for the new receiver is expected with the coming of the summer season. Because of the specifications of this new auto receiver and its ability to perform on practically no aerial at all, coupled with the ease of installation, the Los Angeles Radio Mfg. folks are looking for a better summer season than ever.

The tube business for initial equipment has suffered with the decline in set manufacture in the midget territory but replacement volume is increasing daily. Arcturus carries a local stock and reports a most satisfactory business condition in the Southern California market.

R. J. Noel has removed to his former address and his TRIAD line of tubes is showing a healthy increase in sales. He

expresses extreme optimism and predicts his fall sales will eclipse last year's volume. He also represents Concourse Condensers on the Coast. The Concourse line is one of the best sellers.

Don Wallace has gone back to his old hobby of representing "ham" manufacturers. The lines which he now handles are those which appeal to the amateur. By specializing in amateur radio equipment he reports that his business for the past 90 days is well ahead of the same period for 1931 when he handled nothing but "sets and accessories."

Bert Knight's office is a bee-hive of activity and the many lines of small parts which he represents are used almost universally by manufacturers in Los Angeles.

Up in San Francisco we find business conditions fair. Manufacture of radio sets is confined to the Remler plant from which a conservative output is released daily. Henry Wolff, who was the outside man for Remler for several years, has joined the Kierluff and Ravenscroft organization in the capacity of metropolitan sales manager in charge of Mayflower refrigerator sales. He has already established many new and major outlets for the Mayflower.

A new radio school was opened in San Francisco this month. It occupies the premises formerly used by the now defunct Pioneer Radio Manufacturing Co., which was headed by Feldstern and Silverman. The school has been named MOD-ERN RADIO INSTITUTE, its location, 2500 Market street. Commercial and amateur radio will be taught, in addition to a course in radio service, followed by a television course when the time is opportune. Much expensive equipment has been installed in the instruction rooms and the new institute promises to rival in efficiency and equipment anything in the country. Its owners are two of the most successful retail radio merchants in San Francisco.

The trade will regret to learn that Ed Sargent is confined to the Letterman General Hospital in San Francisco where he is convalescing from a prolonged illness. Sargent will be remembered as the inventor of the INFRADYNE and the head of the Radio Constructors Corporation. His former associate, L. C. Rayment, is the inspection engineer for the Remler Company.

The Grinnell line of electric refrigerators at \$99.50 and the new "Laundry Queen" spin dry washers, was taken on by all of the Coast offices of R. J. Noel. "Business is booming," he tells us.

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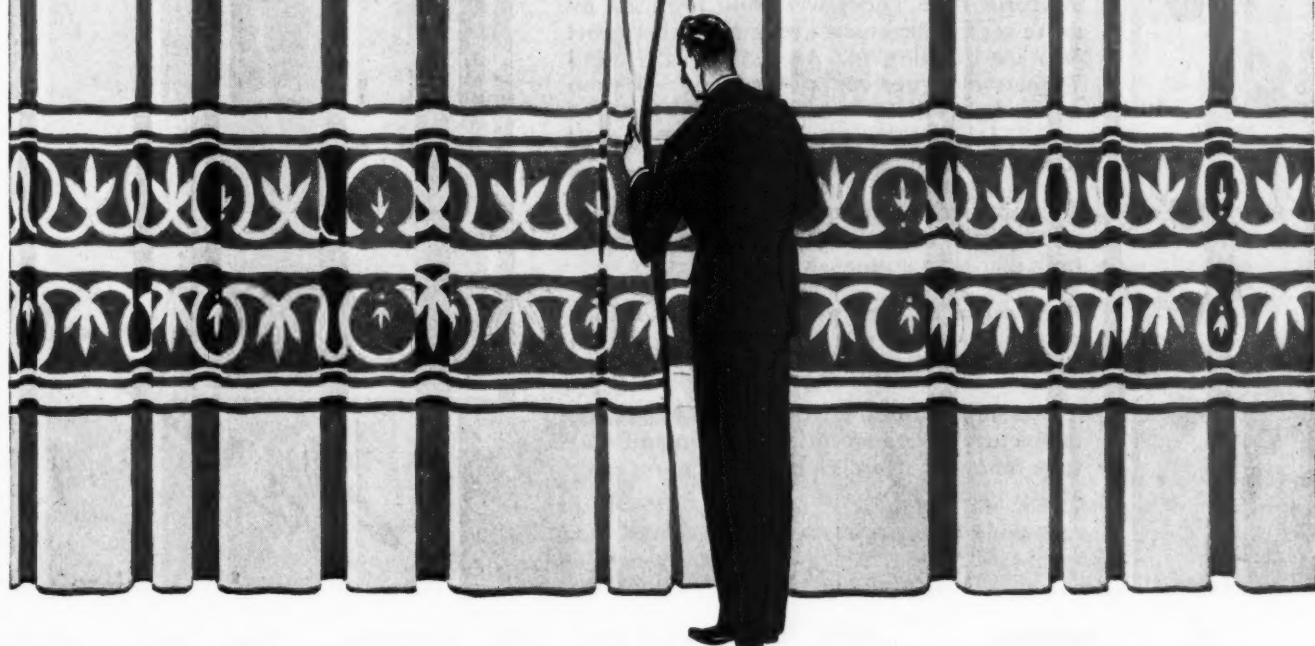
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